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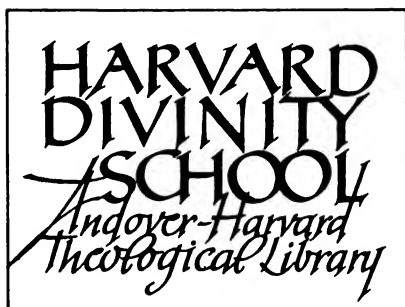
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Plurality of Worlds :

OR

LETTERS, NOTES, & MEMORANDA, PHILOSOPHICAL AND CRITICAL;

Occasioned by

"A SERIES OF DISCOURSES ON THE CHRISTIAN REVELATION,
VIEWED IN CONNECTION WITH THE MODERN ASTRONOMY.
BY THOMAS CHALMERS, D. D."

BY

ALEXANDER MAXWELL.

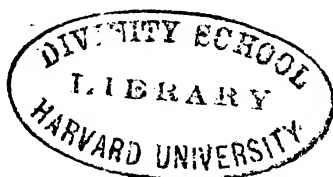
מי זה מחשיך עצה במלך בלי דעת:

Second Edition enlarged.

LONDON :

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1820.



HDS

b21
Chalmers
Maywell

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PREFACE

TO THE

SECOND EDITION.

In presenting the public with a new edition of these Letters in a more eligible form, the author requests the indulgence of his readers to a few prefatory remarks. He wishes to make his grateful acknowledgments to a variety of correspondents—to some of high rank and of eminent learning—for the favourable opinion they have been pleased to express, as to the sentiments contained in this volume. The approbation of such persons is highly satisfactory to his mind, and sufficiently proves that he has not written altogether in vain. It has given him pleasure, also, to observe, that such communications have arisen from persons of different sentiments, as to the mere external forms of religion, while all of them are equally zealous, and honourably

employed, for the common cause of truth and christianity. It has proved, that on lesser points they may disagree, but upon those of the greatest magnitude and importance, they are ready most cordially to unite.

These letters were originally written under the impulse of feelings, excited by the perusal of Dr. Chalmers' Discourses :—On the principal and leading topics of Christianity, their minds, in all probability, are in perfect harmony, however they may differ, as to the proper mode of defence. The author took his station on common ground—with no party views, or sectarian bias, either to please or displease any body of professed christians. His object was the cause of truth and revealed religion. Had he not supposed, at least, that the common cause of Christianity was injured by this injudicious mode of defence, he had never ventured to intrude these Letters upon the public attention. He thinks but lightly of party zealots. To proselyte men to a favourite religious party, is very different from endeavouring their conversion to the grand and imperishable truths of Chris-

tianity. Many will attempt the former, who are very indifferent about the latter. If the author has written with freedom and boldness, he has done what he conceives to be right and just,—to express freely the honest sentiments of his mind : if in some instances he has written with sharpness or asperity, it is addressed to those, to whom it ought to be addressed, who mistake tinsel for gold, and discord for harmony.

In reading the work, with a view to this second edition, the author has made such alterations and additions as he thought convenient. He has simply followed the direction of his own taste. The notes are added at the bottom of the page, because he wishes them to be read and well considered. They are explanatory of the text ; and when read together, their combined influence will be felt. When inserted as an Appendix, they are generally lost upon the majority of readers. If he has succeeded in shewing the vanity of hypothetical opinions in the mathematical and physical sciences, when opposed to the authority of Divine Revelation, he has attained what he considers a very important result, at a mo-

ment when these sciences, are made the basis of a sceptical philosophy.

To the very Rev. Archdeacon Nares, and the Rev. Dr. Edward Nares, he has to offer an apology. In the former edition, he attributed to the Rev. Archdeacon, what belonged to his worthy and learned relative. The mistake is corrected in the present volume.

Nov, 1, 1819.

PLURALITY OF WORLDS, &c.

LETTER I.

INTRODUCTORY OBSERVATIONS.

He who suffers not his faculties to lie torpid, has a chance, whatever be his employment, of doing good to his fellow creatures.

DR. JOHNSON.

DEAR SIR,

It appears surprising to you, that I am not enraptured by the late production of Dr. Chalmers, (1) as you knew that I once found pleasure in the study of astronomy, and some other kindred branches of natural philosophy. Such astonishment, however, may cease to operate, when I candidly express my feelings and sentiments. To the merits of the worthy author, I am not altogether insensible ; to the piety, the

(1) " A series of Discourses on the Christian Revelation, viewed in connection with the modern Astronomy. "

talents, and the splendours of his imagination, I desire to pay every just tribute of respect and praise ; but these things, you must acknowledge, are different from strength of reasoning, careful examination, accuracy of style, and soundness of intellect. The subject which has occupied his attention is of great importance, highly interesting to the christian, and no less instructive to the philosopher ; and one, especially at the present crisis, which should be treated with more than ordinary precision, as it is a subject which has been differently explained by persons of eminent learning and worth, and whose labours in the cause of sacred literature, ought not to be entirely forgotten.

With the book, as a whole, I feel much dissatisfaction ; and, though I may oppose the popular sentiment and strong feeling of many of its admirers, I am not to be deterred from expressing my sentiments, although I do not despise the example of numbers. To you, however, I may freely declare, that I consider this production as a poor and flimsy performance. If you will patiently attend to a few remarks, which I shall hazard upon the subject, and which are immediately connected with the design of this book, you will then be able to see the justness or fallacy of my conclusions. The age, Sir, in which we live, is the age of novelty, of light reading, and of little thinking. Knowledge is widely diffused, but it generally

moves upon the surface : it is shewy and attractive, but not deep and penetrating. So much time is occupied in the reading of periodical works and a few modern authors, that standards of excellence become entirely neglected. The few who have read and thought most, especially upon abstruse and difficult subjects, are not the first to obtrude themselves upon the public attention. Literature, has become a trade, a kind of manufactory, where books are made upon the spur of the moment, agreeable to the taste and profit of the bookseller. Authors are often requested to write upon subjects, that have never given them a moment's previous application. They come disposed indeed, to write upon all subjects (2) ; and many of them are persons of scanty learning of loose morals, and entirely devoted to the cause of Infidelity (3).

(2) To prove this, I would only request you to watch the authors that attract general attention. Works that please and delight the imagination, that regale the idle hour, and prevent the exercise of thought—the Scotts, the Byrons, the Edgeworths, the Moores—with a variety of others of an inferior stamp.

(3) This was pretty much the case with the late Dr. Priestley. When he wished to understand a subject, “ he generally wrote a book ; and when it was attacked two or three times, and he had written replies, then he considered himself as possessing some tolerable acquaintance with his subject.” This information I had from one of his particular friends,

The Science of Astronomy is very pleasing and delightful, and it generally forms an essential part of a good education ; it has become fashionable, to have at least some little knowledge of it, sufficient to appear in parlour conversation. The latest speculation, or pretended discovery, if sanctioned by a great name, is sure to be received without examination. The remarks of the last *visionary* obtain immediate circulation, and the more ridiculous or marvellous the better. Astronomers, who are generally very sceptical upon the discoveries of revelation, are yet the most credulous persons in the world. Possessing some knowledge of mathematical science, they apply that knowledge, not to objects within the sphere of human vision, and the actual reach of demonstration, but to a thousand airy dreams and useless speculations (4). When these are retailed to the public, or taught to our children, or patched into lectures, they are not placed upon their real foundation. The dream is not separated from the reality ; the proper boundary of human knowledge is never marked out ; and the vision

who had it from himself.—Well might it be said of him, “ that his pen went much faster than his understanding.”

(4) Parents should be particularly cautious in the selection of children's books, without a genuine name and authority. The poison of Infidelity is conveyed secretly, and rendered very sweet, and genteel, and palatable.

being more agreeable to the fancy and the imagination, obtains the ascendancy over the other powers of the mind ; so that hypothesis is substituted for genuine truth, and idle conjecture for actual demonstration. The young man is thus enamoured with the enlightened age in which he lives ; and has only to burst asunder the prejudices or the fetters which seem to repress the violence of his passions : he gains new light, is transported into ecstasy, and becomes familiar with the obscurest objects in nature, and with the most distant parts of the creation. Carried away by the impulse of imaginary realities, by the pride of his own heart, and the apparent strength of his reasoning powers, he stamps upon the sacred page, and all the lessons of wisdom which experience, age, and piety, have sanctioned. Elevated and self majestic by these fond conceptions, his eye beholds new wonders and new systems without end ; he is not transported with devotional feelings, with gratitude and wonder, or love and praise ; but with imaginary speculations, the ebullitions of vanity, the sportive creations of a deceptive genius, and the illusive visions of a distempered heart. The idle speculations of some grossly enthusiastic, and not unfrequently, weak astronomer, (for such beings I have seen and known,) are considered more certain and authentic than the Word of God. The predilections, the prejudices, the

sanguine conclusions, the uncertain data, the novelty of discovery, and the fluctuation of system, never weigh a single moment with the generality of readers, or the youthful ardours of an aspiring mind ; all is received without hesitation, as more sure and certain than the sacred writings. It is thus that persons generally receive the discoveries of a Herschel, or some other daring speculator, “with their mouths wide open, and their eyes completely shut.” They cannot, or dare not, or will not reflect ; the vision is so pleasing, and enchanting, that they are easily transported into the regions of fancy, and of aerial demonstration.

The present age is distinguished by one ruling or governing principle, which influences all professions, and pervades all classes in society. Religion, philosophy, science, trade, and politics, are under its impressive domination and fatal influence—a love of display, or of external appearance : the interior occupies but little attention. From the linen-draper’s shops on Ludgate Hill, to the lecturers in the Royal Institution, the same principle seems to be predominant—to dazzle, to amaze, and to attract attention :—and what is the mighty result ? The result is seen, in ten thousand different and hateful forms of misery and distress ; in the gradual decay of good old fashioned principles, and the sacrifice of truth, honour, virtue, and noble

feeling, to every thing mean, selfish, and degenerate. In the present age we are not alarmed or surprized at the young novice, or the bold and ignorant pretender, who pushes himself forward upon the attention of the public ; while the modest, the unassuming, and the intelligent, are too often cast into the shade, and remain altogether unnoticed and neglected. If you make any reflections upon the objects passing in review before you, I think you cannot affirm that these are mere assertions, or unsupported by proofs of every day occurrence. It has been too much the same in every age. Quackery in all professions, especially in science and literary pursuits, gains a temporary ascendancy over the skill of practical knowledge, the labours of research, and the experience of age. But such popularity seldom continues ; it ultimately sinks into its former oblivion. (5) The

(5) “ To works, however, of which the excellence is not absolute and definite, but gradual and comparative ; to works not raised upon principles demonstrative and scientifick, but appealing wholly to observation and experience, no other test can be applied than length of duration and continuance of esteem. What mankind have long possessed they have often examined and compared ; and if they persist to value the possession, it is because frequent comparisons have confirmed opinion in its favour. As among the works of nature no man can properly call a river deep, or a mountain

universal applause given to Dr. Chalmers, does not excite in me so much surprize as to banish from my recollection, that popularity is a very fickle, changeable, unsubstantial thing, and seldom firm and lasting in her attachments. The knowledge of astronomy requisite for these discourses is confined to a very small compass; and therefore, could not be the exciting cause of popular enthusiasm: indeed, a shilling pamphlet, written by Ferguson (6), is sufficient for the purpose. Can you suppose, that popularity founded upon such a basis should be either firm or lasting?

The plan of reasoning, or rather high wrought declamation, adopted in these discourses, in connexion with the science of astronomy, is calculated, in my opinion, to strengthen the arguments of infidels, more than to repress and cor-

high, without the knowledge of many mountains and many rivers; so in the productions of genius, nothing can be styled excellent till it has been compared with other works of the same kindred. Demonstration immediately displays its power, and has nothing to hope or fear from the flux of years; but works tentative and experimental must be estimated by their proportion to the general and collective ability of man, as it is discovered in a long succession of endeavours."

Johnson's Works, Vol. 2. p. 78.

(6) "Idea of the material Universe, deduced from a Survey of the Solar System," by James Ferguson, 1756. By some persons, the paper in the Spectator, No. 565, would be deemed sufficient.

rect the pride of modern philosophy. The writer has given stability to all that the Infidel can wish or desire, without hesitation or doubt, and considered what at best is but hypothesis and conjecture, as fully and completely demonstrated: he has done it, too, without consulting writers of known eminence and value, or mentioning even a single authority. So fully is he persuaded of the truth of these speculations, as to give licence to his feelings, and to a most ungovernable imagination. That the system of modern astronomy, in the way in which it is usually taught, should excite doubt, and speculation, and difficulty in the minds of inquiring men, is not at all surprising or wonderful. It has been a strong fort and rampart with the Infidel for many generations, and it still occupies a very prominent and strong position among writers of that description. (7) Even the

(7) Lord Bolingbroke objects to the Mosaic account of the creation, and "that man is made by Moses as the final end, if not of the whole creation, yet at least of our system." Those who have read the *Age of Reason*, by Mr. Paine, know also what use he makes of the little smattering knowledge of astronomy which he possessed. Here his language is singularly bold and striking. "The system of a Plurality of worlds, renders the christian system of faith at once little and ridiculous, and scatters it in the mind like feathers in the air. The two beliefs cannot be held together in the same mind; and he who thinks he believes both, has thought but little of either." Toland, also, has given currency to some

arguments brought against them have been reiterated from generation to generation. (8)

The conjectures of the modern Astronomer make no remarkable addition to the arguments of Infidelity, which have been repeatedly urged

wild opinions on this subject, in a translation of Jordano Bruno's Book, "Of the infinite Universe and innumerable Worlds : in five Dialogues."—See his *Miscellaneous Works*, vol. 1. p. 316.

I might also refer you to Cudworth, to Cheyne, and many other authors as authorities, if necessary.

(8) "It is a great presumption in mankind to pretend to know all the ends which the wise Creator had, in the vast fabric of the universe ; for some of the great parts of it are almost wholly unknown to us : I mean that of the fixed stars, every one of which of the first magnitude is said to be above a hundred times in bigness beyond the globe of the earth ; and yet how small do they appear to us ! But if we could get a fuller view of them, we cannot imagine that God's great ends could depend upon such a way of discovery. If all his designs had been to be admired by mankind for the greatness of his work, it would have been placed more within our reach ; and the earth we live upon would have borne some bigger proportion to the celestial bodies, which is concluded to be but a point in comparison with the starry heavens ; and the very orb of the sun is thought to be no more in respect of the whole firmament : so that the main part of the universe cannot be said to be made for our view. We grant, therefore, that the infinitely wise and powerful Creator hath great and glorious ends, which are far above our reach ; but how doth it follow from hence, that he hath no ends which we can judge of ?"

Stillingfleet's Origines Sacrae.

and confuted for the last two centuries ; yet they are brought forward as the result of enquiries in the present *enlightened age*. To express any doubts as to the weakness and uncertainty of these conjectures, is to expose oneself to the ridicule of men, who assume the appellation of learned from no other cause than their superficial attainments, conceited superiority, boldness of declamation, and want of argument. Is the disciple of Infidelity permitted to express his doubts, nay to insult the Christian faith with impunity, while the sum of his mighty conjectures rests upon the most doubtful and deceitful of all experiments? Is no one permitted to utter a suspicion or conjecture, to propose a query, or to make any objections to the accuracy of statements, which never have, nay, I may say without presumption, never can be demonstrated? Is all this farce to go on increasing and gathering strength, merely because the great mass of mankind have neither time, opportunity, nor taste to examine for themselves, and to exercise the principle of common sense? Has no one courage enough to lift up his hand, *that the plague may be stayed?* (9)

(9) As a specimen of the true sublime of astronomical nonsense, I submit the following extract, for the amusement of my readers. “ But, to illustrate this subject yet more fully, let it be further considered, that light, travelling at the rate

I have no doubt, Sir, there are many persons fully qualified for the task, who, perfectly under-

of 200,000 miles in a second of time, is upwards of six years in passing from the nearest star to the sun, or to the earth (for the difference can never exceed a few minutes), and upwards of two thousand five hundred years from the remotest star in the solar division. So that, were the nearest star annihilated, it would *continue to be seen for upwards of six years afterwards*; and, were the inhabitants of the more distant parts furnished with telescopes of sufficient powers, *they would now be viewing those nations of the earth which existed two thousand five hundred years ago, and exist now no more.* Their actions, public and domestic, their foreign wars and civil broils; in short, the whole tenor of their lives from the cradle to the grave, *would once again become the objects of sight, in every respect the same as they were seen by their contemporaries.* Nay, so remote are some of the grand divisions of the stars visible to us, that they *must have existed forty thousand years, or they could not yet be seen; for the same reason, they will continue to be visible forty thousand years after they are utterly destroyed.* To the inhabitants of these divisions, the solar division, created five or six thousand years ago, will not be visible for more than thirty thousand years to come. *Thus may cities and states long since subverted, once more be seen in all their glory; and the history, not only of the earth, but of the universe, be repeatedly acted over again.* Thus also, may even time itself be, as it were, realized. Who shall bound the omnipotence of Deity!"

Woolsey's Celestial Companion, fol. 1801.

To perpetuate the renown and mighty labours of this celebrated writer, there is also a very fine portrait added, that posterity may judge of the countenance of the man to whom they are so much indebted.

standing the subject, could easily by force of reasoning, experiment, and fact, shew the futility of these conjectural principles, derived from the system of modern Astronomy. But few perhaps have courage enough to push against wind and tide ; to oppose the mighty rushing of a torrent, which, when excited, breaks through every boundary, and is regardless of all laws human and divine. Instead of examining the fortress of the enemy and at once demolishing it by force, many are desirous of letting it stand, conceiving it perfectly harmless and indifferent. They suppose it may be rendered rather useful than otherwise—a piece of ornamental decoration, which may be turned occasionally on the christian side, and finally become a powerful auxiliary in the cause of truth (10). But such half measures

(10) Such appears to be the design of the work now acknowledged by the Rev. Dr. Nares, “*Ἐὰς Θεός, Ἐὰς Μίσην* : or an Attempt to shew how far the Philosophical Notion of a Plurality of Worlds is consistent, or not so, with the Language of the Holy Scriptures,” 8vo, 1801. It contains much curious information, to which I shall have occasion again to refer. With the system of the author I do not coincide ; but the subject is learnedly and skilfully handled. The modesty of the author commands attention. Although the advocate of the popular opinion, of innumerable systems, and plurality of worlds, he treats the whole as conjectural ; he never loses sight of the possibility of the opposite sentiment, the probability of mistake, and the uncertain data upon which it is built : and this probability and uncertainty is the surest ar-

will never stop the roaring of the cannon, or the ravages of the enemy. The fortress must be assailed, the rampart destroyed, the strong hold taken, ere the christian church be permitted to enjoy peace and safety, or the contest subside between the astronomical infidel and the humble disciple of the christian faith. To attempt this, is the design of the following letters ; and these I shall submit to your candid inspection. The first three discourses of Dr. Chalmers afford the chief materials for remark, and upon these I shall animadvert freely. It is not my wish to please or displease any party ; my object is truth. The investigation and discussion of what is useful and true, is worthy all our labor and diligent research : truth is seldom found among the speculations of fancy, or the wildness of enthusiasm ; but she is discoverable often, when least suspected, in the walks of retirement and in the pursuits of science, enlightened, supported, and cheered by the pages of inspiration.

I remain, dear Sir,
Yours, &c.

gument to the Astronomical Infidel, and such an argument as he never can confute, without a new demonstration of the Universe by an Infallible Hand.

LETTER II.

HISTORICAL REMARKS.

What Plutarch particularly proves of the Stoics, that they spoke more improbabilities than the poets, may be extended to a great part of philosophers, who have maintained opinions more absurd than can be found in any of the most fabulous poets, or romantic writers. KEIL.

DEAR SIR,

I do not suppose you are so much enamoured with these Discourses as to become indifferent to the previous question, which ought undoubtedly to have been first established—whether the modern conjectures about the planetary system are so well founded as to afford any firm ground for the reasonings of Infidelity? If it should appear that the opinions indulged, are idle and supposititious, the labours of the learned Doctor become altogether useless. He has employed his time and talents upon a visionary theme, which may increase speculation and doubt, but which cannot afford any substantial benefit to the cause of Christianity, or to the happiness

of the human race. Of this I am fully persuaded. The mind of the writer is carried away with a principle that is false, and upon that falsehood the airy vision is erected. We are informed, that "it has been reserved for these latter times, to resolve this great and interesting question. The sublimest powers of philosophy have been called to the exercise, and astronomy may now be looked upon as the most certain and established of the sciences(1)." If by resolving this great and interesting question, the writer refers to the opinion now generally prevalent, upon the plurality of worlds, and that astronomy has rendered this opinion certain and infallible, I conceive the assumption not only false, but extremely hazardous.

To confine this sentiment to the present age, manifests little acquaintance with the opinions of the antient philosophers. Every one conversant with the philosophy of antiquity must know the contrary. I could easily select abundant examples, from a group of speculations familiar to the antients, very similar to the conjectures now maintained by modern astronomers; the merit, therefore, is much greater in them, if the sentiment is of any value, as they attained it without "the sublime powers of philosophy which have been called to the exercise," or those

(1) Chalmers' Discourses, page 24.

perfect instruments, which are of such boasted utility (2).

The sentiment now so fashionable in the present age, may be traced to very distant periods of time; for it appears among many other pagan fables, which may be easily collected: any modern Encyclopedia, or even Lempriere's Classical Dictionary, would be sufficient for the purpose. It was customary when the heathens shewed the tombs of their Deities, constantly to assert, that their souls were among the stars (3). Some even thought the stars were animated. Many of the heathen philosophers indulged the opinion, that the moon was a world, and also inhabited. Orpheus, a most ancient Greek poet declared, that the moon had mountains, cities, and houses (4). Anaxagoras, Anaximenes, Democritus, Hera-

(2) Whether the telescope was known to the ancients, is much doubted: that they knew the magnifying powers of glass is certain. By the word *specula*, as used in Pliny, some understand telescope. See the *Postscript to Jones's Essay on the First Principles of Natural Philosophy*. Dublin, 1763.

(3) The Bishop of Clogher, the author of the "Essay on Spirit," adopted the same notion, and said, that he should be content with one of the fixed stars for his habitation after the present life. He observes, "if every one of these stars may be reasonably supposed to have a planetary system, revolving about itself, well might our Saviour say, that in his *Father's house are many mansions*." See *Catcott on the Creation*, p. 25.

(4) Plutarch de Placitis Philosophorum.

C

clides, and Pythagoras, all agree, that i thad firm and solid ground like to the earth we inhabit, containing many fields and divers inhabitants (5). These opinions were more or less in circulation till the time of Kepler (6), when his fertile brain gave it some apparent plausibility.

(5) Diog. Laert. Some of the ancients held a plurality of worlds very different from the moderns ; a repeated succession of worlds by successive dissolution and renovation. To shew the similarity of these notions, we might select many Indian fables. The following is an extract from the introduction of a letter from the great Moghol in 1582, to the King of Portugal, and might well suit a modern astronomer. "The wonderful extent of the heavens and earth, is but a minute part of the world of his creation, and infinite space but a small corner of his production."

Fraser's Life of Nadir Shaw, p. 13.

(6) *Somnium Astronomicum ; de Astronomia Lunari, sive de iis, quæ acciderent Lunæ incolis, quam Luminis et Dierum diversitatem experirentur, aliisque Astronomicis Phænomenis hujusmodi. 1634.* An Astronomical Dream concerning human Astronomy ; or what things shall happen to the inhabitants of the Moon, what diversity of Light and Days they would experience, and concerning other Astronomical Phænomena of this kind." See *Bibliographie Astronomique avec l'Histoire de l'Astronomie depuis 1781 jusqu'à 1802, par Jer. De La Lande.* Upon the above work he gives the following note. "Il parle de ce que verraient les habitans de la Lune. Weidler, page 420. Ce livre est le premier ou l'on ait traité de l'astronomie des habitans des planetes, dont Fontenelle et Huygens se sont occupés." Mr Parkhurst, in his Hebrew and English Lexicon, under the word ככב, makes the

It was doubted by some persons whether he wrote this treatise from the convictions of his own mind, or merely as a philosophical romance. The book however is full of wild and extravagant notions; yet the chief discoveries of Sir Isaac Newton originated with him (7). Kepler had a number of followers upon this subject; but the most eminent was Huygens, whose treatise I carefully read some years ago, and which I consider more philosophical and rational than the former (8).

It will not be difficult to account for the ease with which such opinions are embraced by the human mind, when you reflect upon the force of

following just remarks upon the above work. "What Kepler proposed as a dream, Huygens, and a long list of Kepler's Newtonian followers, have treated as a reality, or at least as a high probability!"

(7) As a specimen of Kepler's extravagance, I insert the following paragraph. "The planets he imagined to be huge animals, who swam round the sun, by means of certain fins acting upon the ethereal fluid, as those of fishes do in the water; and agreeably to this notion, he imagined the comets to be monstrous and uncommon animals generated in the celestial spaces; and he explained how this excited this animal faculty." *Encyclopedia Perth. vol. 2. p. 687.*

(8) *Cosmothereos, or the Celestial Worlds discovered; or Conjectures concerning the Inhabitants, Plants, and Productions of the Planetary Worlds, translated from the Latin by Ch. Huygens. Lond. 1698.* This edition is very scarce. There are two editions, in French, *Paris, 1702; Aust 1718* See *Bibliographie Astronomique, by Jer. De La Lande.*

example, and how few persons, attaining eminence in the science of practical astronomy, are sufficient to direct and influence popular feeling. But the most entertaining writer of this kind was Fontenelle (9), who dressed up these conjectures in a very romantic form, and by a number of far fetched analogies, presumed to be discovered between the starry heavens and the earth we inhabit, has succeeded in gaining the attention of the public. Although not penned imme-

I ought not to omit Bishop Wilkins's *Discovery of a New World in the Moon*, fifth edit. 1684. It contains many absurd things. The good Bishop went much farther than some of the present day—he suggests “the probability of a passage thither.”

Yet it is but justice to add, that in other places of his writings, he spoke with greater propriety. I give as a specimen the following paragraph, taken from one of his sermons—On human learning. “The frame of this great universe, as it is represented to humane consideration and enquiry, appearing like a perplexed labyrinth, wherein there is so much ambiguity in the several ways, so much fallacy in the similitude of things and signs, such obliqueness and intricacy in the course of Nature, that even sense itself, which in such things is our chiefest guide, is fain to wander up and down in uncertainties, and instead of leading us out, does many times lead us into error. And for this reason, Philosophy hath been so often questioned and subverted in the very principle of it.”

Bishop Wilkins's Sermons, p. 187.

(9) “Conversation on the Plurality of Worlds, with Additions, 1767.” Within these few years a new edition, with improvements, has been published by La Lande.

diately in favour of Infidelity, yet the object of the writer, I conceive, was chiefly directed to this end. It is calculated to lead superficial and unthinking minds astray, by the pleasantries of its style and manner. Without any direct attack upon the holy scriptures, it leaves the mind in the regions of wild conjecture, and amidst unnumbered worlds it is lost in eternal darkness (10).

The work of Fontenelle has given a tone to all the modern systems of astronomy; and every little child is now taught to admit these conjectures and romantic effusions as absolute truths, completely within the sphere of mathematical demonstration. Whoever seriously reflects upon the force of education, the power of example, the association of ideas in the human mind, and the gradual reception of these conjectures, will have no great difficulty in accounting for their prevalence in the present age (11).

(10) The reading of this book, the celebrated Horace Walpole, afterwards Lord Orford, said, made him a sceptic. Upon the supposition of a plurality of worlds, he maintained the impossibility of any revelation. The reception of this opinion, he declared, was sufficient with him to destroy the credibility of all revelation. See *Monthly Magazine*, 1798, Article *Walpoliana*.

(11) "By this one easy and unbridled miscarriage of the understanding, (the association of ideas,) sandy and loose foundations become infallible principles, and will not

It was some time before the bold speculations of Kepler could be received altogether by the learned world. Cudworth, whose mind had digested a vast mass of strange opinions and absurdities, and had traced them to their proper source, could not satisfactorily give up his understanding to astronomical authority (12).

suffer themselves to be touched or questioned : such unnatural connections become by custom as natural to the mind as that of the sun and light ; and fire and warmth go together, and so seem to carry with them as natural an evidence as self-evident truths themselves."

Locke's Works, vol. 3, p. 403. 1759.

(12) "We cannot certainly conclude that the works of God and his creation do not transcend those narrow limits which vulgar opinion and imagination sets them, that commonly terminates the universe but a little above the clouds, or at most supposes the fixed stars; being all fastened in one solid sphere, to be the utmost wall, or arched roof and rolling circumference thereof. Much less ought we, upon such groundless suppositions, to infer, that the world might therefore have been made much better than it is, because it might have been much more roomy and capacious. We explode the atheistic infinity of distant worlds ; nor can we admit that *Cartesian*, seemingly more modest, indefinite extension of one corporeal universe, which yet really, according to that philosopher's meaning, hath *nullos fines, no bounds or limits at all*. For we persuade ourselves that the corporeal world is as incapable of a positive infinity of magnitude, as it is of time ; there being no magnitude so great, but that more might still be added to it. Nevertheless, as we cannot possibly imagine the sun to be a quarter, or a hundredth part so

Many eminent writers of the last century, distinguished for research and talent, and fully competent to judge of the subject, did not accede to the ingenious reveries of the modern

big as we know it to be, so much more may the whole corporeal universe far transcend those narrow bounds which our imagination would circumscribe it in. The new celestial phenomena, and the late improvements of astronomy and philosophy made thereupon, render it so probable that even this dull earth of ours is a planet, and the sun a fixed star in the center of that vortex wherein it moves, that many have shrewdly suspected, that there are other habitable globes; besides this earth of ours (which may be sailed round about in a year or two), as also more suns, with their respective planets, than one. However, the distance of the fixed stars from us being so vast, that the diameter of the great orb makes no discernable parallax in the site of them; from whence it is also probable, that the other fixed stars are likewise vastly distant from one another: this, I say, widens the corporeal universe to us, and makes those *flamantia mania mundi*; as Lucretius calls them, those flaming whales of the world, to fly away before us. Now, it is not reasonable to think, that all this immense vastness should be waste, desert, and uninhabited; and have nothing in it that could praise the Creator thereof; save only this one small spot of earth! In *my Father's house*; (saith our Saviour,) *are many mansions*. And Baruch, chap. 3; (appointed by our church to be read publicly,) *O Israel, how great is the house of God, and how large is the place of his possession! Great and hath no end, high and immeasurable!* Which yet we understand not of an absolute infinite, but only such an immense vastness, as far transcends vulgar opinion and imagination."

Cudworth's Intellectual System, vol. 2, 4to. by Birch. 1743.

astronomer (13). Some late writers have the modesty to arrange their speculations under the head conjectural; but they seem to wish in general to confound them with other things which are more certain. In your perusal of Dr. Chalmers' Discourses, I think you must have felt an occasional surprize at the *learned credulity* of

(13) The late celebrated Mr. Wesley had some very just doubts upon this subject. He carried on a controversy with a writer in the London Magazine, the whole of which may be found in his very interesting and entertaining work, "A Survey of the Wisdom of God in the Creation, or a Compendium of Natural Philosophy," in 5 vols. 12mo, edit. 1809.— See the article, "Doubts concerning Modern Astronomy." I refer you also to the *Hutchinsonian writers*, among whom were men of considerable learning, and well acquainted with the Newtonian philosophy.

The following extract from the writings of Lord President Forbes, is characteristic of the modesty, becoming a great and good man. "It is rash to affirm that the universe, or even the solar system, was made principally for the sake of the earth, or of man; because for aught we know, there may be many more, and more considerable uses for it. It is at the same time not certain, at least to me it does not appear to be so, that there was any other use for creating these immense heavenly bodies, but to regulate the motion of the earth; to produce the other effects which some of them evidently have, and all of them in a greater or smaller proportion may have, on the earth; and to raise in man that idea of the magnificence, power, and skill of the Creator, which the contemplation of the immensity, motion, order, beauty, and utility of these bodies must produce." *Works*, vol. 2, p. 93.

the writer; the ready credence given to every novel speculation ; not wishing as he states, " to throw any disguise over that comparative littleness which belongs to our planet, and which gives to the argument of free-thinkers all its plausibility (14)." By this concurrence, he gives all that support to the infidel astronomer, for which he is so tenacious, and which I consider so dangerous in its ultimate tendency. If, however, the Doctor means to say, that " by this great and interesting question being resolved in these latter times," he should refer us to the discoveries of Dr. Herschel; to these very discoveries I would also refer him for proof of the wildness of speculation, and the pregnant associations, of a disordered mind. I have read them often with astonishment. Let any man unfettered by system go to the same telescope and examine the heavenly bodies for himself, and see if it be possible to adopt such wild theories, or to collect more extravagant absurdities, than have been invented by this celebrated astronomer. Philosophers have ever been fond of erecting schemes for the construction of the universe ; of peopling the starry heavens, and neglecting the station they occupy in the scale of creation. Every age has had its Aris-

(14). Chalmers' Discourses, page 6.

totle, or Descartes, or Newton. The fashionable system is received without investigation. All are convinced, and few examine; and these few invent theories fit only for the nursery, or speculations that might adorn the pages of Gulliver, and embellish the wonderful achievements of the renowned and humourous Don Quixote. (15)

I am, dear Sir,

Yours, &c.

(15) These discoveries are to be found in various parts of the Philosophical Transactions, within the last thirty years; and from such authorities, Dr. Chalmers, I apprehend, has ventured the following speculative assertions. "It lends a delightful confirmation to the argument, when from the growing perfection of our instruments, we can discover a new point of resemblance between our Earth and the other bodies of the planetary system. It is now ascertained, not merely that all of them have their day and night, and that all of them have their vicissitudes of seasons, and that some of them have their moons to rule their night and alleviate the darkness of it. We can see of one, that its surface rises into inequalities, that it swells into mountains and stretches into vallies; of another, that it is surrounded by an atmosphere, which may support the respiration of animals; of a third, that clouds are formed and suspended over it, which may minister to it all the bloom and luxuriance of vegetation; and of a fourth, that a white colour spreads over its northern regions, as its winter advances, and that on the approach of summer this whiteness is dissipated, giving room to suppose that the element of water abounds in it, that it rises by evaporation into its atmosphere, that it freezes upon the application of cold, that it is precipitated in the form of snow,

that it covers the ground with a fleecy mantle which melts away from the heat of a more vertical sun ; and that other worlds bear a resemblance to our own, in the same yearly round of beneficent and interesting changes.—Who shall assign a limit to the discoveries of future ages ? Who can prescribe to science her boundaries, or restrain the active and insatiable curiosity of man, within the circle of his present acquirements ? We may guess with plausibility what we cannot anticipate with confidence. The day may yet be coming, when our instruments of observation shall be inconceivably more powerful. They may ascertain still more decisive points of resemblance. They may resolve the same question by the evidence of sense which is now so abundantly convincing by the evidence of analogy. They may lay open to us the unquestionable vestiges of art, industry, and intelligence. We may see summer throwing its green mantle over these mighty tracts, and we may see them left naked and colourless after the blush of vegetation has disappeared. In the progress of years, or of centuries, we may trace the hand of cultivation spreading a new aspect over some portion of a planetary surface. Perhaps some large city, the metropolis of a mighty empire, may expand into a visible spot, by the powers of some future telescope : perhaps the glass of some observer, in a distant age, may enable him to construct the map of another world, and to lay down the surface of it in all its minute and topical varieties. But there is no end of conjecture ; and to the men of other times, we leave the full assurance of what we can assert with the highest probability, that on planetary orbs are so many worlds, that they teem with life, and that the mighty Being who presides in high authority over this scene of grandeur and astonishment has there planted the worshippers of his glory.”

Chalmers' Discourses, page 30.

LETTER III.

ON THE ANGLE OF PARALLAX.

And indeed, to confess the truth, it is hardly possible for a man to distinguish, with any degree of certainty, seconds, or even ten seconds, with instruments, let them be ever so skilfully made; therefore it is not at all to be wondered at, that the excessive nicety of this matter has eluded the many and ingenious endeavours of such skilful operators.

DR. HALLEY, on finding the Sun's Parallax.

DEAR SIR,

In perusing these discourses upon the science of astronomy, I have often been compelled to pause with astonishment at the boldness of the writer, and the confidence with which he speaks of those things which are founded altogether in uncertainty and conjecture. In a professed admirer of the Baconian style of reasoning, we might have expected a little more caution, precision, and judgment; but there are some writers who select words, not to give cogency to the argument and accuracy to the reasoning, but merely for the sake of a fine period, or what is yet worse, to give colour to a

false and dangerous sentiment. We are told, in this book, "that by a process of measurement, which it is unnecessary at present to explain, we have ascertained first the distance, and then the magnitude, of some of those bodies which roll in the firmament (1)." Now, Sir, it is to this *process of measurement* that I wish at present to direct your serious consideration. It is that link in the chain of reasoning upon which the strength of the cause entirely depends; and that link, if once broken, leaves the whole system in confusion and disorder. Touch this one link, and the airy structure and pleasing vision instantly dissolve.

That the three angles of a triangle are equal to 180° , or two right angles, is known, and can be easily demonstrated; but that the angle of parallax can be ascertained with like certainty by geometrical principles, is altogether a fallacy, and I may add, a gross imposition. We know the measure of the earth; it is ascertained with great accuracy, and by this measure we obtain the earth's radius; and if we could take the angle of parallax, the distance of any planet might be easily found by the common rules of trigonometry. By a knowledge of the sun's distance from the earth, we acquire the supposed dimensions of the solar system. But who can

(1) Chalmers' Discourses, p. 25.

remain satisfied with the mode by which this angle of parallax is obtained? The ease with which such measurements are received by different astronomers, shews the credulity of the human mind upon those things which are agreeable to preconceived hypothesis. I have given this subject much consideration, and among the most eminent authorities can find nothing like satisfaction. If you will give yourself the trouble to make a fair examination of the case, I think your doubts will increase in exact proportion to the extent or depth of your inquiries.

The mode of obtaining the angle of parallax must be liable to continual variation, from known and unknown causes; and this is agreeable to fact and experiment (2). The process will not bear a strict examination. It is exposed to every puff of wind, and to every change in the atmosphere, and sometimes made dependent upon the distance of the eye from the glass of the telescope (3). You will please to observe,

(2) It is also agreeable to etymology, *παράλληλις*, of *παράλ-λιν*, to vary alternately.

(3) "The double motion of the earth and other moving orbs, difference of atmosphere, various degrees of light, as they are farther from or nearer to the sun, the universal struggle, termed vibration, contribute to make their nearness, and magnitude, and distance, uncertain."

Hutchinson's Works abridged, p. 163.

that the measurement of this angle requires great delicacy, and very few persons can or will undertake it. A single second in so small an angle as that of the sun's parallax, will occasion an error of about seven millions of miles in the distance. You will observe likewise the twofold motion of the earth, and according to Dr. Chalmers, it is moving at the inconceivable velocity of a million and a half miles a day(4). You recollect also, that

(4) "The first thing which strikes a scientific observer of the fixed stars, is their immeasurable distance. If the whole planetary system were lighted up into a globe of fire, it would exceed by many millions of times the magnitude of this world, and yet only appear a small lucid point from the nearest of them. If a body were projected from the sun with the velocity of a cannon ball, it would take hundreds of thousands of years before it described that mighty interval which separates the nearest of the fixed stars from our sun and from our system. If this earth, which moves at more than the inconceivable velocity of a million and a half miles a day, were to be hurried from its orbit, and to take the same rapid flight over this immense tract, it would not have arrived at the termination of its journey, after taking all the time which has elapsed since the creation of the world. These are great numbers and great calculations, and the mind feels its own impotency in attempting to grasp them. We can state them in words; we can exhibit them in figures; we can demonstrate them by the powers of a most rigid and infallible geometry: but no human fancy can summon up a lively or an adequate conception—can roam its ideal flight over this immeasurable largeness—can take in this mighty

the body upon which the angle of parallax terminates is exposed to a similar motion, and perhaps to a double motion. Add to these difficulties, the changes in the atmosphere, of light and heat, and refraction and aberration, and then endeavour to persuade yourself, if possible, that such an angle can be taken with any thing like tolerable accuracy. If we however appeal to fact and experiment, the cause is at once decided. Instead of being demonstrated as certain and infallible, it is ever changing, according to the caprice or to the skill of different astronomers. Such has been the fate of the sun's parallax—from nine seconds to thirty-two, or from twenty-six millions of miles to ninety-five; and from such opposite extremes

space in all its grandeur and in all its immensity—can sweep the outer boundaries of such a creation, or lift itself up to the majesty of that great and invisible arm, on which all is suspended." *Chalmers' Discourses*, p. 36.

This extract contains some of the common-place conjectures, to be found in modern treatises of astronomy. To demonstrate them by any thing like geometrical reasoning, is impossible. I am inclined to believe, that the earth does not move above a diameter in twenty-four hours; probably much less. This is conjecture, you say, and so I give it: but this conjecture is as good as any in the above discourses, and possesses an additional advantage, as being far more rational. See *Baxter's Matho*, in the *Annotations* to vol. 2; and also *Catcott on the Creation*, p. 27.

the general result is found (5). We have no means by which we can rectify these mistakes; and they all tend to confute the random assertions in these Discourses, that these great calculations are demonstrable, by the powers of a most rigid and infallible geometry.

Concerning the distance of the fixed stars, no scheme hitherto adopted can discover it to us. Like a phantom, it ever eludes the grasp. Dr. Herschel has proposed some method for ascertaining the parallax, similar to Galileo and others. "But all the attempts of astronomers, to discover the change of position, or annual parallax, with the most accurate instruments, have been

(5) During the transit of Venus over the sun's disc in 1760 and in 1769, the parallax was taken at about nine seconds. Sir Isaac Newton had made it ten seconds, Mr. Whiston thirty-two, Mr. Machin about eight, Mr. Cassini about four and a half, and Dr. Halley twelve. These experiments, made by skilful practitioners and with capital instruments, fully demonstrate the folly of the above assertions of Dr. Chalmers in the preceding note. Mr Keil, who was undoubtedly a great astronomer, comes to this conclusion. "By these, and the like methods, if any phænomenon has a parallax not less than one minute, it may be found out. In the moon we find the parallax very considerable, which in the horizon amounts to about a degree, or more. But there are some particular methods, only applicable to the moon, by which its parallax is known."

Keil's Astronomical Lectures, p. 257. 1769.

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found insufficient to detect it (6).” When philosophers have a system floating in the brain, they only perceive objects in one direction ; they never turn their eyes on one side or the other, and dare not look behind, lest some spectre should appear to give them trouble or uneasiness. I will put two extracts together, in the notes below, of this kind, which in my opinion overthrow all these pretty notions about the distances of the fixed stars. It requires little calculation. A schoolboy acquainted with the rule of three, and with these extracts in his head, may be able to confound the greatest astronomer (7). If 12,000 feet elevation make such a difference in the organ of vision, how is it that

(6) Brewster's Edinb. Encyclopædia, vol. 3, p. 677.

(7) “ If our earth rolls along the ecliptic, as is allowed, which crosses the equinoctial in an angle of twenty-three and a half degrees, and the sun's mean distance from us be about eighty-one millions of miles, by the rules of trigonometry it is plain, that the earth will sometimes be above thirty-two millions of miles on the north side of the equinoctial, and sometimes the like distance on the south side of it, or twenty three and a half degrees on the globe ; whence the fixed stars when in the zenith to an equatorean in our winter and summer must evidently differ sixty-four millions of miles, or what our globes mark out for forty-seven degrees : that is, any fixed star which is in the zenith to an inhabitant in the equator, in December, will be above sixty-four millions of miles more southerly in June, than then ; and let the stars’

sixty or seventy millions of miles, in the different positions of the earth in its orbit, are said to

distance be ever so immensely great, it is no manner of service or refuge to an astronomer whatever, because our instruments are now so accurately made, as to tell to a second; and their situation or direction in this case, will be parallel both in our summer and winter. The earth's axis not only preserves a parallelism as to north and south, but likewise to one horizon, and is always parallel to itself. But no sensible difference as to the stars ever yet appeared to any observer, either in England or at the equator; for the very same stars which are in the zenith at one time of the year will be so throughout the whole year; and this no person can presume to deny. From hence it evidently appears, I think, that the earth rolls precisely in the equinoctial, with her axis perpendicular to the plane thereof, which finely exhibits the wisdom of the Creator, and banishes unnatural conjectures; for we know that nature delights in simplicity, and does nothing in vain."

Bamfield's Treatise of Astronomy. 1764.

In contrast to this extract I wish to place the following observations of Mr. Brydone.—He found, in his journey to the top of Mount Etna, the milky way to make a glorious appearance, like a pure flame that shot across the heavens; and with the naked eye could observe clusters of stars that were invisible in the regions below. "We did not at first attend to the cause, or recollect, that we had now passed through ten or twelve thousand feet of gross vapour, that blunts and confuses every ray before it reaches the surface of the earth. We were amazed at the distinctness of vision, and exclaimed together, What a glorious situation for an observatory!"

Brydone's Tour, vol. 1, p. 199.

make no sensible difference (8)? Let common sense decide, and the enchantment will cease. Can men, with such conjectural evidence before them, presume to draw unwarrantable conclusions, and to insult the sacred volume, a book containing the greatest intrinsic value and evidence, and supported by a train of facts, of miracles and prophecy, of such a train as no human imagination could possibly invent, and no combination of deceptive scenes could possibly impose? They may continue to assault it, but their every attempt will rebound like the foaming billows, dashing with unremitting violence and apparent rage against the solid rock, firmly erected and proudly triumphant amidst the tumultuous and boisterous ocean.

If any thing could awaken the attention of mankind to the impossibility of attaining an exact knowledge of the distance, and consequently of the size of the planetary bodies, it must be the continual difference which appears between calculations made by able and distinguished as-

(8) Dr. Chalmers always takes the first principle for granted, and upon that he builds hypothetical notions. The measure—the distance—the certainty of the fixed stars being suns—these are some of the first principles by which he is carried away into the regions of immensity. He talks of the modesty of true science, and without a blush can utter the most unguarded and hazardous opinions.

tronomers. The two greatest astronomers of the present age are supposed by some to be, Schroeter in Germany, and Dr. Herschel in England. They have both exercised their repeated skill in the measurement of the new planets, found to exist between the orbits of Mars and Jupiter. With the application of the nicest instruments, they differ so materially, as to prove to a demonstration the uncertainty, if not the impossibility, of such calculations (9). If any man, after reading these statements, should consider the conjectures raised from such premises

(9) "According to the measurement of Herschel, the diameter of Ceres does not exceed 160 miles, while the observation of the German astronomer, Schroeter, makes it 1624 miles. Schroeter accounts for this remarkable difference between his measurements and those of Dr. Herschel, by maintaining, that the projection micrometer used by the English astronomer, was placed at too great a distance from the eye; and that he measured only the middle clear part of the nucleus of the planet." "The diameter of Pallas is determined by Dr Herschel at 80 miles, while Schroeter makes it no less than 2099 miles."

Brewster's Edinburgh Encyclopædia, vol. 2, p. 638.

A similar difference in calculation is observed in the other new planets. The results of Schroeter's experiments are generally greater than those of Dr. Herschel. The attempt to account for it, is as weak as it is futile. I have no doubt but it proceeds from the variation of density in the atmosphere. To allow this, however, would be very injurious to the fashionable system.

as deserving attention, let him, if he please ; but let him not gravely assure the public, who know very little about it, that such immense calculations are founded upon certain principles, “ even upon a rigid and infallible geometry (10).”

In measuring what are called the mountains, or more properly, the rugged appearances on the moon’s surface, the proportion is taken from the shadow perpetually varying, and the radius of the moon ; something is granted which is hypothetical, and the common reader is then informed, that geometry can take the measure of a mountain on the moon, with the same ease as of one upon the earth. The word geometry is used to enforce belief without inquiry ; the mere assertion passes current for demonstration, and inferences are drawn, agreeable to the visionary schemes of a restless and disordered imagination. In all this you perceive nothing like the cautious induction of experimental philosophy, but of random assertion and wild speculation. It is the fault of these Discourses, that they are not written upon geometrical principles, but upon principles chiefly discoverable in the writings of infidel philosophers.

(10) I cannot suppose Dr. Chalmers to be altogether unacquainted with these things : they are discoverable in the Dictionary, for which he wrote one of the best articles to be found in that work, (Dr. Brewster’s Edinburgh Encyclopædia) under the head *Christianity*.

In all these declamatory harangues, you read nothing about the possibility of optical illusion (11). No difficulties are started. No doubts are cherished (12). Every thing in the form of a discovery is to be received, provided it swells the human imagination with pride and self-importance. If it sanctions the ideal immensity, which is by some persons considered

(11) "The habit of seeing as soon as we open our eyelids, makes us look upon that operation as a thing extremely plain and intelligible. However, I shall boldly assert, that the mysteries of our holy religion are not more above our understandings, than is the manner in which we see, or than that inmost sentiment which we experience, of the disposition and magnitude of the things which are so remote from us. That my eye by the help of an image but six lines broad, or my soul with the organ of half an inch, should see eight or ten leagues, and discern the beauty, the form, the situation and distances of one million of objects dispersed all over this plain, is a mystery truly inaccessible to all our reasonings. That operation must either be corporeal or spiritual. But whatever it may be supposed to be, it will in both cases be equally above our reason. It is an unfathomable abyss. But it is a truth, and an undoubted matter of fact."

Spectacle de la Nature, vol. 4, p. 114, 8vo edit.

(12) "Let any one not skilled in painting, be told when he sees bottles and tobacco pipes, and other things so painted, as in some places are shewn, that he does not see protuberances, and you will not convince him but by the touch; he will not believe that by an instantaneous legerdemain of his own thoughts, one idea is substituted for the other."

Locke's Works, vol. 3, p. 404. 8vo edit.

as the best proof of genuine science, it is to be admitted among those truths which are considered self-evident. Magnitude and distance, are the two levers used to impel the imagination. To a mind that has thought over the nature of human vision, and the means by which we gradually attain our knowledge of distant objects, something more will be found requisite. When we reflect on the absolute necessity of some intermediate chain of connection, in order to judge of distance, we shall never speak confidently of calculations formed hypothetically, however neat and delicate, merely by the aid of optical experiments (13). Many things are to be considered which should humble the pride of human science, and prevent bold and daring conjecture. We are to remember, that the estimate we make of distant objects, especially those so considerably remote, is an act of the judgment, grounded on experience rather than on sense. Not only the apparent magnitude, but the colour of the object, the various degrees

(13) Vide Bishop Berkeley's *Essay towards a New Theory of Vision*, to be found in his works, 2 vols. 4to. 1784. If this book is attentively read, and the principles it contains applied to our mode of estimating the size, distance, and measure of the planets, we shall not, I think, lay much stress upon the hypothetical notions indulged in by many astronomers.

of light and shade, the necessary conformation of the eyes, the proper direction of the optic axes, and the interposition of other agents, are to be taken into the calculation. To these we may add a suggestion on the proper sphere and boundary of human vision (14). Is it not proper to

(14) "It is observable, that the late astronomers have strongly magnified the bulk and distances of the stars, and as much lessened their apparent bigness; or we could not make each star a sun, especially such as are in the milky way, where the suns are very thick set. About sixty years ago they made the sun at 128 semidiameters of the earth from us: now Cassini and Huygens reckon 22,000. Stars, in those days, were but 2000 times as far off as the sun; now, Sirius is 27,000 times as far off. Sirius, by Tycho, was computed at three minutes diameter; by others, two minutes; and Galileo, but five seconds: the moderns allow it no apparent diameter, and only see it as a lucid speck or point. Glasses of six or eight feet give it a considerable diameter: glasses between twenty and sixty feet see it with a diameter of seven or ten seconds; but glasses of a hundred feet see it as a speck. I do not doubt but at last, by lengthening the glasses, they may reduce the sun to a speck too. That telescopes do not lessen the diameters of the sun and moon (as they do those of the stars) is, that their light is brisk, and not weak: but that long telescopes do scatter and yet farther lessen weak light, was observed by the French Academy when the great comet appeared in 1680. For after the head of the comet disappeared to the eye, it was seen by telescopes; by one of four feet, plain; but by one of twenty feet, confusedly and dimly. Nay, the tail of the comet was seen by the naked eye, long after it could not be seen through a telescope.

suppose that some limitation is given to our researches, and more especially to the researches of the eye? Effects are visible; but are not the exciting causes concealed? Is it not reasonable to conclude, that the system of the heavenly bodies is very different from all the speculations of astronomers, whether ancient or modern? To say nothing of the optical knowledge we possess, much more is yet requisite, before we can use such inflated language as abounds in these popular Discourses (15). Who can assure me,

This seems a little odd, that the tail and not the head should be seen latest by the eye, which is fitter to see a faint light, and takes into view a larger scope of the heavens. The tail of the comet could not be seen through the glasses because of the paucity and weakness of the rays; nor the head by the eye, because of the smallness of it, and rays from a great scope of the heavens confused it. And farther, I must say, that the eye is fitter to represent the true magnitude, if freed from glaring light; which the most ingenious Sir Isaac Newton was convinced of, and therefore proposed reflecting glasses for this purpose. But as to telescopes, if the object be near, they magnify; and if at a vast distance, they represent objects too little, and will never answer to judge of the magnitude of the stars."

Innes' Miscell. Letters on Philosophy and Astronomy.

Vide Catcott on the Creation, p. 27.

(15) "We should feel a sentiment of modesty at this humiliating, but just representation. We should learn not to look on our earth as the universe of God, but as one paltry and insignificant portion of it; that it is only one of the many

that the human organ of the eye, aided by the best instruments, can penetrate this mighty boundary? By what experiment is it established? In what book is it written, and by what process of reasoning is it proved? Tell me, ye who understand the laws of vision, what changes take place upon the appearances of objects at the distance of a thousand miles? Can you, with these and numerous other queries which easily arise in the mind, and are confirmed and illustrated by well known facts and experiments (16), think

mansions, which the Supreme Being has created for the accommodation of his worshippers; and only one of the many worlds rolling in that flood of light, which the sun pours around him, to the outer limits of the planetary system."

Chalmers' Discourses, p. 33.

(16) "We are deceived by every thing around us; even our senses mislead us; and what we think ourselves the best acquainted with, frequently proves to be an illusion. Objects seen at a distance never appear in their true places; they are always more or less elevated, according to the season, and the hour of the day; and on this account, it is not easy to determine either their true height, their direction, or the angle at the center, which depends upon this direction."

Bonnycastle's Astronomy, p. 262. 1787.

"The fixed stars, when beheld with a telescope, appear prodigiously small; and whereas Tycho Brahe tells us, that those of the first magnitude appear to the naked sight about two minutes diameter; they appear not unto us, according to Galileo, but five seconds, which is twenty-four times less. Tycho Brahe makes these stars to be sixty or seventy times bigger than the earth; at this time, on the contrary, they are

for a moment, with this visionary writer, that "astronomy is the most certain and best established of the sciences?" The flights of a romantic and

found to be two hundred times less than the earth. * Kepler warns us, that with the telescope the greatness of any fixed star cannot be determined, because by how much better the glass is, by so much the lesser the stars appear †. They are judged to be very far from being all of a bigness : those visible to the naked eye are taken to be of six several magnitudes : those of the first rate are conceived one hundred and eight times bigger than it. But to come to a perfect and exact knowledge of the distance of the heavenly bodies (by miles or such known measures), of their bigness, substance, frame, and contexture, is not to be expected ; nor will any except madmen pretend to have made such discoveries. There are very few things, which truly wise men will say they thoroughly understand, even amongst sublunary bodies. By this ingenuous dealing, the reader will be able easily to gather what kind of belief he is to give to the foregoing calculations, or accounts of the distances and magnitudes of these bodies. They are mostly but the conjectures of men very learned, industrious, and knowing in this kind. But there is as great difference betwixt the knowledge which artists and speculative men have of the heavens, stars, and orbs, and that which the common people have, as there is betwixt the common people and brutes ‡ notices of them."—*Vide Astronomy's Advancement, or News for the Curious, being a treatise on Telescopes ; a piece containing great Curiosities : done out of the French, by Joseph Walker. London, 1684.*

* "Utrum horum mavis accipe."

† A humourist, to whom I read the above quotation, replied, "Then in a glass which is quite perfect, I suppose you cannot see any stars at all."

‡ "Man differs more from man, than man from beast."

picturesque imagination are very different, generally, from the soberness of truth; and are better adapted to works of fiction, than the pursuits of rational science, and of moral disquisition.

When we talk about the magnitude and distance of the fixed stars, and compare the imagery that is known, with that which is unknown, there can be no fair or legitimate conclusion.

“ I fancy these calculations about the fixed stars may not exactly coincide with the accounts with which some more modern astronomers have amused the learned, and amazed the unlearned; but as their reckonings are contained in all the astronomical horn-books of the day, it is unnecessary for me to transcribe them here. Some of them talk of immeasurable space, and distances only not infinite, with an air of as much confidence as a mail-coachman would tell you the distance between London and York. An arithmetician, who pretends to calculate exactly the distance or dimensions of the fixed stars, deserves as much attention as a madman telling his dream; or as Sir Hudibras, when he reckoned that the sun, and his brethren the stars, were

‘ ————— a piece
‘ Of red hot iron as big as Greece.’ ”

“ And of the moon he tells us,

‘ What her diameter to an inch is,
‘ And prov’d she was not made of cream cheese.’ ”

I am indebted for this singular quotation and additional remarks, to *Dr. Kitchiner's Practical Observations on Telescopes, Opera-Glasses, and Spectacles*, p. 112. 1818. This gentleman is well known, for his superior and valuable collection of telescopes, and the practical knowledge he has obtained, from long and repeated observations, on the stars and planetary bodies. His readiness to gratify the taste, or assist the inquiries of those, whose pursuits are of a similar kind, de-

The comparison made between the lofty vessel retiring from the coast, and the flight of the eagle with its expanded wings in the regions of the open air, are images, which do not fitly apply to the object intended. The little we know of the human eye, does not admit of such comparisons, with objects so remote as the fixed stars. The heavenly bodies may appear small to the eye of an inhabitant of the earth, not only from the immensity of the distance, but from the smallness of the object. Philosophers may be pleased, while contemplating bodies at very remote distances from the earth; the imagination may play over a million of miles, the immensity of space, and of space *without termination*;—these are big words, and by the use of them, the individual may seem to flourish and shine: by a reiteration of such words, they may excite the vulgar stare, and the clapping of the populace; but

mands also a public testimonial. The above work, is justly described in the Philosophical Magazine, as “containing some practical hints for the use of amateurs of the delightful study of astronomy. The work describes, in a plain, unaffected, and circumstantial manner, the acquisitions requisite to enable an amateur to prosecute that science with pleasure to himself and advantage to others.”

In addition to this long note, I may be permitted to add, for the benefit of those, who wish to study the theory of Telescopes, &c. a recommendation of the best work for this purpose—“*New Elements of Optics, by B. Martin.*” 1759.

they leave the mind without just sentiments, or useful knowledge. Let Dr. Chalmers recollect, that if space has no termination, he is fast verging into the very gulph of atheism. I would not fasten such a conclusion upon his reasoning unjustly ; but it is a conclusion, in my opinion, easily deducible from the sentiments which he has adopted (17).

I am, dear Sir,
Yours, &c.

(17) " Space is only one of those ideas that are excited in the mind by matter, and the power in the mind of abstracting from its subject, just as we can image a colour to ourselves without connecting in our apprehension a subject with it wherein it exists ; a little more of the same metaphysic which can prove that nothing is extended, will prove that space is purple. It is a very ingenious contrivance in philosophers, to render *nothing* a subject of enquiry and conception, by dressing it in a suit of clothes borrowed from *something*, and then gravely tell us that this nothing is the form of God."

Adams' Lectures on Natural Philosophy, vol. 3,
p. 9. edit. 1794.

"Such is the essential attribute which belongs to these different bodies, of expanding and diffusing themselves, that the plenitude of matter in space is found to exist *every* where, and a *void no where* : which extension is the essential attribute of matter, so space is the necessary recipient of it ;—and as matter cannot exist without space to contain it, so space cannot subsist without matter to fill it."

Saumarez' Principles of Physiological and Physical Science, p. 228.

“Et certé spatium nihil est, nisi corporis ipsa Mensura.”

De Polignac anti Lucretius, vol. 1, p. 58.

“Pure space is a mere figment of philosophers, space not being absolute, but relative to the bodies comprehended in it: so that if these were annihilated, space would perish along with them; like all other relations, which cannot be conceived to exist without their correlatives.”

Bishop Berkley.

Vide Biographia Britannica, by Kippis, vol. 2, p. 253.

In Dr. Chalmers, I object to such expressions as these.—“The planetary system has its boundary, but space has none.” Page 34. “Those tracts, which sweep endlessly along, and merge into an awful and mysterious infinity,” &c. Page 42. The same kind of jingle frequently occurs. “We even ventured to expatiate on those tracts of infinity, which lie on the other side of all that eye or that telescope hath made known to us.” Page 95.

“This same infinite space is the most wonderful thing within the whole range of being. It is neither God nor his creature, and yet is inseparable from the being, either of God or of any thing he can create. It is infinite both in its extension and its duration. It is immoveable and indivisible. If a compleat definition of it were put into a lady’s pocket book, she would guess it to be an enigma for *nothing*, and would be astonished to hear that it is the quintessence of a most metaphysical and most subtle argument maintained by a most celebrated divine and philosopher.”

Wesley’s Wisdom of God, vol. 3, p. 276.

“Others have considered infinite space as the receptacle, or rather the habitation of the Almighty; but the noblest and most exalted way of considering this infinite space, is that of Sir Isaac Newton, who calls it the sensorium of the Godhead.”

Spectator, p. 565.

LETTER IV.

UNCERTAINTY OF SYSTEMS.

In our passage through the boundless ocean of disquisition, we often take fogs for land ; and after having toiled to approach them, find, instead of repose and harbours, new storms of objection, and fluctuations of uncertainty. DR. JOHNSON.

DEAR SIR,

If you have a taste for the works of nature, and wish to acquire that knowledge which is useful, you must not place too much dependance upon systems, however well established, if the first elements upon which they are founded, are only hypothetical. With some parts of science, this will always be the case. With the physical parts of astronomy, it is chiefly the case. Most of the elementary books receive the prevailing system, and few individuals make any further inquiries. Many writers owe their eminence and their influence over the opinions of the public, to the assumption of principles in themselves apparently true,

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but which, when closely examined by observation and experience, are found to be false. (1) The more progress you make in the attainment of

(1) Such I conceive to be the case with "*An Essay on the Principle of Population*, by T. R. Malthus, A. M." No work in the present day is likely to prove more mischievous and dangerous in its consequences and effects : and its influence over the minds of some persons in the higher classes of society, is still more to be deprecated. The direct contradiction to the well known multiplication of the powers in nature, in all the various sources of human enjoyment ; the arbitrary, and in many instances chimerical illustration of these principles ; with the supposititious and false data which pervade the whole, must I think be apparent to every considerate and thinking mind. Population follows no certain, or mathematical law ; and the rapid increase of the means of subsistence, has ever been and will continue to be, in exact proportion to the wants and necessities of mankind, and even to superabundance. In civilized life, man consumes more upon his pleasures than upon his real and necessary wants, and the overflow is employed upon that which is chiefly artificial, or at least unnecessary, and too often injurious.* The vast resources, also,

* Water is a primary, if not the chief article of necessity, in the subsistence of animated beings—The abundance of supply must command the grateful acknowledgement of every truly enlightened and devout mind. Independently of its many uses, the circulation and local supply is matter for wonder and delight, manifesting the admirable provision afforded for the necessities of man—"the constant round which it travels ; and by which, without suffering either adulteration or waste, it is continually offering itself to the wants of the habitable globe."† Had the writer of this work been able to prove a deficiency in the natural and constant supply of water, he might have laid some foundation for his absurd conclusions. While the abundance of water so far exceeds the greatest extent of human population, aided by the resources of the earth, the elements and surrounding atmosphere, and the genius and agency of man, no fear can be indulged from the greatest extent of human population.

† Paley's Theology.

real knowledge, the more diffident you will become : enough is discoverable to satisfy an ingenious and devout mind, but very little, to satisfy the inflated notions of human pride, and the love of *science falsely so called*. The history of philosophy, is the history of human weakness and folly. Fables have too often been taken for realities, and the love of nonsense, for the love of truth. (2)

in the earth and the bowels of the ocean, yet indeed but partially explored, are in this work passed over with a cold and flimsy, unfeeling, and sceptical indifference. Written expressly against the principles of Mr. Godwin's speculative theory, in which there was something left to awaken the dormant feelings of the soul ; this work is far more mischievous, for here every generous feeling of the heart is chilled ; all is torpid, putrid, pestilential, and lifeless ; an apology for vice and misery, and of every evil and abominable crime ; and terminating finally in envy, hatred, and discontent. The system which this author espouses, annihilates every noble and dignified passion in the breast of man, alike opposed to all good government, to the authority of revelation, to the divine order of Providence, and even to the very existence of Deity. An heathen poet might have taught him juster sentiments, better divinity, and sounder philosophy.

Quando aliud ex alio reficit Natura, nec ullam

Rem gigni patitur, nisi morte adjutam aliena.

Lucretius, lib. 1, l. 265.

(2) " In the mean time, the world is tossed in a blanket among them ; they hoise the earth up and down like a ball, make it stand and goe at their pleasures : one saith, the sunne stands, another he moves, a third comes in, taking them all at rebound : and lest there should any paradox be wanting,

Considerable light has been thrown upon scientific subjects, and the operations of nature, by the labours of experimental philosophers : but the persons thus occupied are often so embarrassed by system, that every new discovery in the agency of the surrounding elements, appears more like the effect of accident than the result of theory and rational deduction. The plan suggested by Lord Bacon is very admirable, and he is the proper subject of just eulogium ; but how few of his pretended admirers put into practice the rules which he advised (3). In

he finds certaine spots of clouds in the sun ; by the help of glasses, by means of which the sun must turne round upon his own center, or they about the sun. *Fabritius* put only three, and those in the sun ; *Appelles* fifteen, and those without the sun, floating like *Cyanean* isles in the Euxine Sea, and are so confident, that they have made tables of their motions. The *Hollander*, in his *Dissertatiuncula cum Apelle*, censures all : and so whilst these men contend about the sun and moon, like the philosophers in *Lucian*, it is to be feared the sun and moon will hide themselves, and be as much offended as she was with those, and send another message to *Juppiter*, by some new-fangled *Icaromenippus*, to make an end of all those curious controversies, and scatter them abroad."

Burton's Anatomy of Melancholy, p. 218. edit. 1624.

(3) "The system of induction, introduced by Lord Bacon, had not for its end, as many of his unworthy followers have supposed, the mere abstract accumulation of facts. Facts, isolated and unconnected, resemble the rough mate-

these Discourses, his name appears with a sort of radiant beauty; but to me it would seem as a mere expletive, a kind of set off, to the opinions of the writer; for surely it can never be said, that these Discourses are the result of the Baconian philosophy (4).

rials intended for the foundation of a magnificent edifice. The carpenter who chips the timber, and the mason who polishes the marble, are not to be considered as the men of science; but he alone, who from a precise knowledge of principles and of causes, is able to direct those materials to be arranged with order, form, and symmetry. It was with that end in view, that his lordship analysed before he generalised; that he has separated the individual from the species; the species from the genus; and from a multitude of effects, endeavoured to arrive at cause."

Saumarez' Principles of Physiological and Physical Science, p. 10. 1812.

Originality of thought, and great power and independence of mind, with a discrimination of judgment, and much sound philosophy, are discoverable in this volume. It is one of those few modern works which amply repays the reader for his trouble; and which few of the real friends of science can read, without pleasure and improvement.

(4) "Experimental philosophy deduces the properties of bodies from actual trials; reasoning first by analysis, and then by composition. It has an advantage in being more nearly allied to Natural History than the systematic forms: for as, that is the best moral philosophy which is built on the real history of man, so that must always be the best natural philosophy which is built upon the history of nature. It is in philosophy as in other things, experience is the

I have always found those persons to speak with much reserve and caution, who have made the greatest proficiency in science, and who have

greatest of all masters ; and if it does not teach us something in philosophy, this can only happen because we have been falsely taught before. The alchymist began his labours with this persuasion, that Nature intends all metals for gold ; and wanted nothing but the assistance of art to carry on its operation to its due effect, in all those instances where nature itself had miscarried : there his experiments never gave him any light ; he paid dearer for wit than most men, and never found it at last. Lord Bacon was the first who attempted to rescue the learned from the bondage of system, and recall them from abstract reasonings to experiments. He threw out his natural history in the form of a loose undigested collection of facts, to excite the public curiosity ; as knowing that a farther enquiry, upon the same ground of actual observation, would naturally tend to take men off from their beloved notions and theories, to examine the real constitution of the world. All the late discoveries in Electricity, which have opened an entire new field in philosophy, have arisen from facts, to which the experimenters themselves were not led by any previous train of reasoning, but conducted by accident. Experimental philosophy shews us, that certain effects are produced under such particular circumstances, which must be minutely attended to. Systematic philosophy undertakes to shew why they are produced ; and from some known effects, deduces many others of the same kind. But with all this, there are few practitioners who are not attached by education or affection to some system ; so that they will speak for an experiment, instead of permitting it to speak for itself."

Jones's Physiological Disquisitions, 4to. p. 14. 1781.

examined with candour the foundation of those opinions now most generally prevalent respecting the system of nature. Aware of difficulties, their conjectural reasoning is modest. Those who take up the common opinions without inquiry, are generally carried off by a centrifugal force; under the influence of one impulse, they *proceed* in a right line, and are seldom drawn to any just centre of attraction. Like the writer of these Discourses, the imagination is "lighted up" rather than the judgment. When geometry is applied to certain ingenious combinations of matter, both are associated in the mind, and the certainty of the one is considered as a sufficient passport for the other. But the fallacy is easily discoverable, if the disposition is willing to encounter the difficulty (5). The Copernican system is generally admired, and adopted without any reserve. It would be almost a kind of heresy not to adopt it. But it is clogged with difficulties. I am persuaded of the truth of the Copernican system, under

(5) "Epicurus, exhausted by voluptuousness, framed his world and his atoms, which exclude all ideas of a Providence, from his apathy; the geometrician forms it with his compasses; the chemist with salts; the mineralogist derives its origin from fire; and those who apply themselves to nothing, and they are not a few, suppose it, like themselves, in chaos, and wandering at random. Thus the corruption of our heart is the first source of our errors."

St. Pierre's Works, vol. 1, p. 148.

some different scale of proportions, and believe that it will answer for the general phænomena of the heavens; but I perceive an almost insuperable difficulty, and that difficulty proceeds chiefly from the love of system (6). If the earth's orbit was comparatively small, and the orbits of the other planets in similar proportions, the scheme would be far more rational, consistent, and harmonious.

The course of nature, after all our conjectures, experiments, and calculations, may be very different from any known hypothesis (7). Con-

(6) "That the earth is only a point with respect to the universe, though it be a pretty large *postulatum*, yet possibly must be granted upon any hypothesis; but that not only the earth, but the whole *magnus orbis*, or that vast orbit which the earth describes round the sun, should be esteemed a point, (without which supposition the Copernican hypothesis cannot be maintained,) is such a *postulatum* in astronomy, as the more a man thinks of, the less easily he can assent to."

Baker's Reflections on Learning, p. 107. edit. 1738.

(7) "The Copernican, or rather the Newtonian system, cannot be said to be capable of demonstration in this point of view, though mathematics have been so far and so wonderfully applied to prove it: for after all, who has ever seen the earth revolve? Or what is more, who can persuade himself by the mere testimony of the senses, that the body of the sun does not revolve? A plurality of worlds is still less to be ascertained with any certainty."

"I believe the figure of the earth to be fairly demonstrated.

jecture is the summit of all our knowledge of the solar system. What then must be our knowledge of the fixed stars, and those distant parts of the system, which are magnified by a telescopic imagination ! Take a view of the fixed stars, and the nebulæ and maculæ, if you please, by the aid of the best glasses, and you will be convinced that much ingenuity is requisite to persuade any thinking man, whose head is not already systematized beforehand, with the prevailing notions of the modern astronomer. The system has been grafted upon the human intellect, and what is seen, is that which already pleases and delights the fancy (8). The under-

I believe the conjectures about the cause of its form to be exceedingly philosophical, and as near as can be, demonstrated also ; but I would not undertake to say, that what we conjecture to be, was indisputably the cause :—*an oblate spheroid might be made*, without the revolution of a yielding substance as an imaginary axis, and even with the same proportional difference in diameter. I do not mean to say that I am not, as far as mere philosophy can go, a perfect Newtonian ; but I cannot admit that the works of God are in any instance so openly revealed as his word ; and yet this, Deists seem to think a point not to be disputed."

Dr. Nares on the Plurality of Worlds, p. 76.

(8) "What do you call all these worlds ?" said she, looking at me and turning towards me. I beg your pardon ; answered I : you have occasioned me to be guilty of a folly, and immediately my imaginations have escaped me. What then is this folly ? replied she. To this I answered, I am

standing has been taken by surprise, and surrendered, before it was rationally convinced. The theory of comets which is generally received, *proves* the uncertainty of systems formed merely to give strength to the speculative parts of scientific knowledge. Kepler is said to have discovered their paths; Dr. Bradley to have described their motions and computed their elements: and Dr. Halley erected a theory, agreeable to the system which he had adopted: but the labours of these eminent men have ended in nothing. The subject is yet a *desideratum* in the science of Astronomy (9).

sorry, madam, that you oblige me to confess my folly, but I have long entertained an opinion that each star may very probably be a sun to enlighten other worlds. I will not, however, swear that this is true; but I hold it for true, because it gives me pleasure to believe it. It is an idea which pleases me, and which is very agreeably fixed in my mind."

Fontenelle, p. 7. 1767.

(9) "The astronomy of comets, from what I can remember of it, appears to be clogged with very great difficulties, and even some absurdities. It is difficult to conceive that these immense bodies, after being drawn to the sun with *the velocity of a million of miles in an hour*, when they have at last come almost to touch him, should then fly off from his body, with the same velocity they approach it; and that, too, by the power of this very motion, that his attraction has occasioned. The demonstration of this, I remember, is very curious and ingenious; but I wish it may be entirely free from sophistry." *Brydone's Tour, vol. 2, p. 145.*

The discovery of four new planets, between the orbits of Mars and Jupiter, is one of the most singular events in the history of modern astronomy. Conjecture is now at work ; but no rational solution is to be found. It seems to disturb the general harmony of the system ; and suppositions are indulged, which I conceive are incompatible with the tender and beneficent care of an Almighty Parent, and altogether contrary to that Providence which is unfolded in the sacred volume (10). The Bible, however, is now

Comets are portions of the atmosphere in a state of combustion ; and from their history “ it decidedly appears, that instead of describing complete revolutions, they are consumed and dissipated long before any one revolution is completed ; and consequently, that their return can neither be anticipated nor ascertained.

Vide a chapter on Comets, in *Saumarez' Physiological and Physical Science*, p. 389.

(10) “ The incompatibility of these phænomena with the regularity of the planets' distances, and with the general harmony of the system, naturally suggests the opinion, that the irregularities in this part of the system were produced by some great convulsion, and that the four planets are the fragments of a large celestial body which once existed between Mars and Jupiter. If we suppose these bodies to be independent planets, as they must be if they did not originally form one, their diminutive size, the great eccentricity and inclination of their orbits, and their numerous intersections when projected on the plane of the ecliptic, are phænomena absolutely inexplicable, on every principle of science, and completely subversive of that harmony and order which,

grown obsolete with these self-elated theorists, and the more repugnant to the principles of that book, the more grateful to their feelings. They seem to leave us, alas! in a most pitiable and forlorn condition, at the mercy of some blazing comet, or some other mysterious and hidden power in matter, a quality easy and pliant, that will accomodate itself to all conjectures. How sceptical and miserable and cold the philosophy, which inculcates principles like these! Dreadful to consider, and melancholy to anticipate! You must read it with astonishment—you must read it again: for it proceeds from a professor of christianity, even from the pen of Dr. Chalmers. “We cannot anticipate with precision the consequences of an event, which every astronomer must know to lie within the *limits of chance and probability*. It may hurry on our globe towards the sun, or drag it to the outer regions of the planetary system, or give it a new axis of revolution; and the effect, which I shall simply announce without explaining, would be to change the place of the ocean, and bring another flood upon our islands and continents. These are changes which may happen in a single instant of time, and against which nothing known in the

before the discovery of these bodies, pervaded the planetary system.”

Brewster's Edinburgh Encyclopædia, vol. 2, p. 641.

present system of things provides us with any security (11)."

If such sentiments as these are admissible in the theories of the modern astronomer, they are certainly inconsistent with the principles of christian philosophy, and the word of the divine testimony. The plain christian, who has drawn the best of all his materials from the Bible, may justly take the alarm, at "the very sound and semblance of philosophy, and feel as if there was an utter irreconcilable antipathy between its lessons on the one hand, and the soundness and piety of the Bible on the other (12)." Some apology, however, may be admitted for the worthy doctor. He has been walking, I humbly conceive, near the cold and benighted precipice of infidelity, and his return to a more happy station has not yet produced all those salutary effects, which may be hereafter expected.

The difficulties connected with the Copernican system have been acknowledged by many of the greatest astronomers. Our tables have been improved more by observation than system. The calculations which now enrich the nautical ephemeris, are framed upon the necessary supposition, that the earth is at rest. Every scheme of the heavens hitherto invented, will more or less

(11) Discourses, p. 52.

(12) Preface, p. 11.

answer for the varied phænomena ; and nothing like geometrical certainty is to be expected. The motion of the earth is not absolutely proved beyond all possibility of doubt ; and you will find that men of the greatest eminence, as mathematicians, express themselves with a modesty and caution, in perfect contrast to the author of these Discourses (13). Are not such difficulties to be expected ? From the little knowledge we possess of those things which are immediately within the reach of experiment—of those things which we daily see, and feel, and taste, and know—

(13) " It was acknowledged by Huygens, when questioned about the certainty of the earth's motion, that he replied, " In his opinion, as long as we were upon the earth, nobody could be able fully to prove the same." Sir Isaac spoke with caution and hesitation. " If the annual parallax of the fixed stars could be obtained, we might be said to have arrived at a tolerable degree of certainty." Copernicus observed, " Since various hypotheses are often adapted to one motion (as in the course of the sun an eccentricity, and a motion about the center), an astronomer may chuse that, which is most easily comprehended." A greater probability may perhaps be required from a philosopher, yet neither of them can be able to discover anything with certainty *unless God reveals it to them*. Let no body, therefore, so far as it concerns an hypothesis, expect any thing certain from astronomy, since it won't afford any thing like that, least by admitting for truth, that which is dressed up for other purposes, he should leave this science with greater folly than he engaged in it."

Vide *Nieuwentyt's Religious Philosopher*, vol. 3, p. 1079, &c.

which come under the cognizance of sensation, and which more properly attach to the earth we inhabit; is it not evident that we are surrounded with mystery and shrouded in darkness? The growth of a blade of grass, the most familiar insect, and the smallest atom of matter, defy the skill and talents of the profoundest observer (14). What then shall we say of bodies, far removed from the ken of human vision? How many things lie hid, and above the research or beyond the sphere of the human intellect? But it is from such latent sources as these, that Infidelity gathers its strongest arguments; and it is in this view that I think the author of these Discourses is greatly culpable. He penetrates into the regions of conjecture and uncertainty, to find arguments in support of revelation;—arguments which are at best unnecessary, and arguments that will not weigh down a feather in the estimation of a mathematical infidel (15).

(14) “All chemistry ends in something that eludes our senses. We try to measure and class affinities, and other operations; but as to the primary cause of these things, all is as much conjecture as ever.” *Dr. Nares, p. 119.*

(15) “Be not so *positive*, especially with regard to things which are neither easy nor necessary to be determined. I ground this advice on my own experience. When I was young, I was *sure* of every thing. In a few years, having been mistaken a thousand times, I was not half so sure of

If the real system of nature was clearly understood by the intelligence of man, and discoverable by the powers of geometrical analysis, it would be found much more simple and easy, than any perhaps hitherto invented. If we can judge by analogy from what we see and know, it would undoubtedly lead to such a conclusion. There is much in the present system of astronomy that deserves attention, as far as it can be rendered useful to the present situation and circumstances of man ; beyond this, all is uncer-

most things as before. At present I am hardly sure of any thing, but what God has revealed to me. Upon the whole, an ingenious man may easily flourish on this head. How much more glorious it is for the great God to have created innumerable worlds, than this little globe only ! But after all, I would ask one plain question. Suppose there are more worlds than there are sands on the sea shore ;—is not the universe finite still ? It must be, unless it be God. And if it be finite, it can still bear no proportion to him that is infinite, no more than this ball of earth does. How large soever it be, still compared to him, it is as nothing, or the small dust of the balance. Do you ask, then, what is this spot to the great God ? Why, as much as millions of systems. *Great and little* have place, with regard to us ; but before him they vanish away. Enlarge the bounds of creation as much as you please, still it is but a drop to the Creator."

Wesley's Wisdom of God, in the Worlds of Creation,
vol. 3, p. 265.

I could willingly transcribe the whole of the chapter ; but I recommend it to your particular attention.

tainty and trifling. Take the nearest of the heavenly bodies, the moon; examine its appearance by the best constructed telescope; read all that has been written upon it by the most skilful astronomers, and nothing remains to satisfy a mind that thinks and reasons for itself—a mind not warped by theory and fanciful hypothesis (16). Its path is mysterious and difficult to calculate; its motion rapid and self-evident; but there is something so intricate and doubtful in all that is said about this planet, that you will seek in vain for any thing like demonstration (17). Although this instrument of light has been supposed to be measured, its topography ingeniously illustrated (18), and its situation in the

(16) "One would be surprized that so small a matter as a little variation in the sun's force, should cause so many irregular motions in the moon, as she is found to have; much more, that they can be brought to no certain rules, but such as are in the highest degree intricate and laborious. So that this single secondary planet gives the astronomer more trouble than all the celestial bodies besides."

Emerson's Astronomy, p. 273.

(17) "It is very surprizing that the moon, which of all the heavenly bodies is the nearest to us, should be of such difficult access; that it should be so hard to find out her ways, and the causes of all her irregularities."

Keil's Astronomy, p. 103.

(18) *Vide* Schroeter's Topography of the Moon.—Fragments Topographiques de la Lune, *Gott.* 1802. This work is said to merit the attention of every lover of astronomy.

heavens calculated with the nicest accuracy ; yet the whole theory of its motions is enveloped in confusion and darkness—much more the nature of its substance and the probability of its being inhabited. The mountains and valleys, the seas and rivers, the fields and orchards, the beauty of its scenery, and the nature of its productions, are all in the head of the observer, and not fairly deducible from the appearances which it presents (19). What is seen in that opaque body does not sanction, in my opinion, any proper ground of analogy, between the earth we inhabit,

It contains a number of calculations and measurements of the supposed mountains and valleys in the moon, and speculations on its atmosphere.

(19) “The dark parts have, by some, been thought to be seas ; and by others to be only a great number of caverns and pits, the dark sides of which next the sun, would cause those places to appear darker than others. The great irregularity of the line bounding the light and dark parts on every part of the surface, proves that there can be no very large tracts of water, as such a regular surface would necessarily produce a line, terminating the bright part, perfectly free from all irregularity. If there was much water upon its surface, and an atmosphere, as conjectured by some astronomers, the clouds and vapours might easily be discovered by the telescopes which we have now in use ; but no such phænomena have ever been observed.”

Vince's Principles of Astronomy, p. 163.

Various speculations have been indulged concerning the spots on the moon's surface, equally idle and suppositi-

and the luminary by which it is enlightened (20).
I have looked through excellent telescopes, but

ous. Some philosophers have been so taken with the beauty of the brightest places shewn in her disc, that they have imagined them to be rocks of diamond, and others, pearls and precious stones.

Vide *Encyclopædia Perthensis*, vol. 2, p. 664.

(20) "That the moon is an opaque body, is no new discovery; the nature of eclipses has long since shewn it, and I am afraid it is little we yet know beyond this. For though the moon has been divided into sea and land, and the division so much acknowledged, that a man's parts must have been suspected, that would have doubted of the thing; and though the obscure parts of its body have been generally thought to be watry, and the luminous parts earthy and solid; yet this division seems rather to be grounded upon an inference of reason, to wit, that the obscure and watry parts imbibe the light, whereas the earthy solid parts reflect it, than upon the experience of sense, assisted by glasses. These glasses, indeed, discover the difference betwixt the dark and luminous parts much more clearly than the naked eye can, but will never shew the nature of either, or what substance they are of, much less distinguish the different portions of earth and water. But men come possessed with an opinion of seas and rivers, and then easily think they see them (as every sound does answer the tune that runs in our ears), and after one man has seen them it is a reproach to the next, not to be as acute and distinguishing as he: and so we cheat one another into a tolerable argument. That this is the case I am verily persuaded: for though I can neither pretend to good eyes, nor good glasses, and therefore will lay no weight upon my own opinion, yet *Huygenius*, who had them in perfection, and who writ since

could not see any thing to support such an opinion:—to me it appears absurd and altogether ridiculous. The growing perfection of instruments, and the points of resemblance, afford us no certain data. Impediments to the further enlargement of human vision, must be evident to every person well acquainted with the science of optics; for what is gained by increase, is lost in the distinctness of the object (21). That some of the heavenly bodies revolve, and

these accurate maps were taken, could observe neither seas nor rivers in the moon, and expressly denies that any such are to be seen there. And there is this reason besides, that if any such were, they must necessarily raise a mighty atmosphere, which, as it would hinder our clear prospect at all times, so by its clouds it would sometimes darken one part of the moon's body and sometimes another; whereas now the dark and luminous parts are always the same: so that as far as I can see, we know little more of the moon, than that it is an opaque and solid body; and so much we were pretty well assured of before telescopes came in fashion."

Baker's Reflections on Learning, p. 111.

(21) "Some stars I have observed with a power which diminished the diameter of the pencil to nearly one hundred and twentieth of an inch; *i. e.* a power of 420, with an aperture of three inches and five eighths diameter in the clear. I have never yet seen any object that appeared to require a greater power: and it requires a most perfect telescope, and every other favourable circumstance, to admit of this being used with any advantage. From the rapidity of the rotatory motion of the earth, the limited excitability of the eye, and the impediments to vision arising from our

that others are fixt, is all that we know ; and all beyond is mere conjecture. Ever since I looked at the moon through a good telescope, I have been much surprized at the credulity of the human mind, in the combination of opinions raised from the appearances of this planet.

To the wild speculations of the modern astronomer difficulties present themselves in every direction : but these are easily obviated by some new conjecture ; and this conjecture being engrafted upon some former one, and illustrated by geometrical lines and figures and demonstrations, passes among the multitude for “ rigid and infallible geometry.” Had Dr. Chalmers been a real disciple of Lord Bacon, he would have proceeded more cautiously. Before he had admitted this visionary theory, he would have made sure of the first step

magnifying the atmospheric medium we look through in proportion as we magnify the object we look at, increasing in so high a ratio to the magnifying power, that more than 100 for terrestrial, and 300 for astronomical use, rather impedes than assists vision. And again, when we charge our telescopes with a higher power than 300 times, what very uncommon dexterity is required, either to find the object, or manage the instrument ! It is indeed fortunate, that a higher magnifier is rarely needful ; as it cannot be used to much advantage, *till the atmosphere be removed, and the earth stand still.*”

*Dr. Kitchener's Practical Observations on
Telescopes, p. 125.*

of his argument ; some first principle, or proof ; and from hence he might have proceeded, by analogy, to a more extensive field. He might have taken the nearest object in the regions above, and having proved the moon to be a world, he might then have gone forward in his bold career. But that first link being wanting, the whole is little better than a pleasing dream—an empty shadow—a *vot et præterea nihil*—a speculation — the sportive phantom of a deluded imagination.

I am, Dear Sir,

Yours, &c.

LETTER V.

ON THE CHARACTER OF NEWTON,

AS A PHILOSOPHER & CHRISTIAN.

The sagacity of SIR ISAAC was admired by all, and adored by his countrymen. His genius pushed him to discoveries in the most abstruse parts of the mathematics, that have caused the astonishment of the learned; and at the same time, from accurate observations made on nature, he has given hints, which, though by him flung out in the form of queries only, his countrymen have converted into so many certain propositions; and upon them have founded what they pretend to be a complete theory or system, which future experiments and discovery must try the solidity of. But it must be owned, SIR ISAAC's modesty was much greater than that of his followers, not only in the title he gave to his notions, but in the respect with which, notwithstanding his vast genius and superior knowledge, he treated the Deity and the Scriptures.

LORD PRESIDENT FORBES.

Now the point that I want to impress upon you is, that the same public who are so dazzled and overborne by the lustre of all this superiority, are utterly in the dark as to what that is which confers its chief merit on the philosophy of Newton.

DR. CHALMERS.

DEAR SIR,

The biography of learned and eminent men is always interesting, and peculiarly instruc-

tive ; yet we have reason to lament that we can seldom obtain a correct picture, and generally a very flattering likeness (1). The light is so vivid and dazzling, that it is with much difficulty we detect the original features ; so that the likeness is lost in the brilliancy of the colouring. With persons of an ordinary cast of mind, and whose talents do not rise above mediocrity, it is generally the case. The writer has a task imposed, perhaps from interest, or affection, or the love of popularity ; and he wishes to compose something that shall please the taste of the public ; and perhaps at the same time, he endeavours to preserve the distinguishing features in the origi-

(1) A portrait painter once told me the following anecdote. "A gentleman requested him to take his likeness ; and looking round upon some fine portraits in his drawing room, which he kept for exhibition and for proof of his talents, said, "he wished the form of his countenance should be accurately drawn, but he should like a very handsome and beautiful portrait. I should like (said he) the forehead of this—the eye of that—the nose of a third, the mouth of a fourth—the chin of a fifth—I must have a very beautiful portrait." In much the same way authors are sometimes compelled to write biography. Dr. Johnson has justly observed, "The necessity of complying with the times, and of sparing persons, is the great impediment of biography. History may be formed from permanent monuments and records ; but lives can only be written from personal knowledge, which is growing every day less, and in a short time is lost for ever."

nal character. In this he often fails, because we see all light and no shade; the beauty and the harmony of nature is altogether forgotten. The perusal of Dr. Chalmers' third Discourse naturally leads to reflections like these.

Of Sir Isaac Newton I believe we know comparatively little (2). The excellencies and defects of his character are chiefly discoverable in his writings. That he had many excellencies, is certain; and that he had some defects, is equally well known. When we see him drawn, therefore, in very glowing colours, and the picture hung up for public inspection, and worshipped as a kind of little deity, it becomes us to warn mankind of the danger of being led astray by the very production which yields them pleasure (3). If you

(2) "The first life of this illustrious man which appeared, was drawn up by Fontenelle, from materials furnished by Sir Isaac's nephew, and published in the Memoirs of the French Academy. Why none of his countrymen executed such an undertaking, we shall not inquire. This, however, is the life from which all succeeding biographers have extracted their materials; and it formed the ground-work of the long, but somewhat confused account, that has hitherto appeared in this Dictionary. But like almost all the *eloges* published in the Memoirs of the French Academy, it seems better calculated to display the abilities, and answer the private views of Fontenelle, than to convey accurate information." *Chalmers' Biographical Dictionary*, vol. 23, p. 137.

(3) Dr. Chalmers, it is true, is not the only one who has made an idol of Newton. "Does Mr. Newton eat, drink, or

form an estimate of his character from this Discourse, and imagine you have got a correct likeness, you will, I think, be grossly mistaken. With respect to the anxieties of his mind, the difficulties he endured, and the wrongs he suffered, they were trifling. Few men passed through life with more ease and apparent enjoyment; and very few, especially of public men, with less opposition. A common tradesman acquainted with the difficulties and anxieties of life, has far more to endure than the close sequestered student, whose circumstances are easy, surrounded by amiable friends, and whose habits of life are virtuous and correct. Persons confined to the study, and who know little practically of human life, sometimes imagine a feather to be a mountain, and a little drop of water to possess the gravity of the ocean. Dr. Johnson knew human life well in all its shades and varieties, and felt much agitation of passion; but I apprehend Newton felt little. His life was one continued calm, with scarce a ruffle to accelerate his progress. He continued long upon the ocean, gently sailing, without any violent storm, pursuing an even and steady course, amidst the

sleep like other men? said the Marquis de l'Hopital, one of the greatest mathematicians of the age, to the English who visited him. I represent him to myself as a celestial genius, entirely disengaged from matter." *Ibid.*

clear beams of a summer's sun, until he finally arrived at the haven of rest (4).

"Thus God gives to every man
The virtue, temper, understanding, taste,
That lifts him into life and lets him fall
Just in the niche he was ordained to fill."

COWPER.

The modesty of Sir Isaac Newton was undoubtedly great: it might be partly constitutional, and partly from his peculiar habits (5). In

(4) Many curious anecdotes of Newton are to be found in "Whiston's Memoirs of his own Life," 2 vols. 1753: from which much of his real character may be drawn, without partiality or prejudice.

(5) "He had a peculiar aversion to disputes, and was with difficulty induced to enter into any controversy. The warm opposition his admirable discoveries in optics met with, in his youth, deprived the world of a full account of them for many years, till there appeared a greater disposition among the learned to receive them; and induced him to retain other important inventions by him, from an apprehension of the disputes in which a publication might involve him. He thus weighed the reasons of things impartially and coolly, before a publication of them can be suspected to have engaged him in their defence. It is well known how slow he was in publishing: and we cannot but observe, that the temper and disposition of mind, as well as the abilities of this great man, fitted him in a particular manner for penetrating far into nature, and unfolding her harmony."

*Maclaurin's Account of Sir Isaac Newton's
Discoveries, 4to. p. 13. edit. 1448.*

some instances it might proceed from indecision; a fluctuation of mind which could not easily determine: for this disposition, I think, is apparent in his philosophical and religious opinions. In his philosophy it is evidently conspicuous. The greatness of his mind as a mathematician is universally acknowledged; no man ever possessed stronger faculties of penetration, or had greater success in the higher departments of calculation (6). His mechanical genius was of the first order, of which he gave surprising proofs at an early age. But with all these talents, it is possible to fall into the love of system, of wild speculation, and philosophical romance. What has been supposed to be discovered by the force of

The following extract is a strong proof of modesty and real dignity. "In Spence's Anecdotes we are told, that when Ramsay was one day complimenting him on his discoveries in philosophy, he answered, 'Alas! I am only like a child picking up pebbles on the shore of the great ocean of truth.' " *Chalmers' Dictionary.*

(6) "In contemplating his genius, it becomes a doubt, which of these endowments had the greatest share; sagacity, penetration, strength, or diligence; and after all, the mark that seems most to distinguish it is, that he himself made the justest estimation of it, declaring, that if he had done the world any service, it was due to nothing but industry and patient thought; that he kept the subject under consideration constantly before him, and waited till the first dawning opened gradually by little and little, into a full and clear light." *Ibid.*

mathematical reasoning, and the cautious induction of experiment, is traced by himself to a mere accidental circumstance (7), to which he applied

(7) "In 1665, when he retired to his own estate on account of the plague, the idea of his system of gravitation first occurred to him, in consequence of seeing an apple fall from a tree. This remarkable apple-tree is still remaining, and is usually shown to strangers as a curiosity." *Ibid.*

"It has been in direct violation of these self-evident truths, of the absolute and essential difference which exists in the different species of matter existing in the universe, that the Newtonian laws of nature are founded : 1, By supposing that reaction was always equal, and contrary, to action, he has confounded capacity with power ; things inanimate with animated beings ; and demanded a condition of things to exist, which has no existence—space without matter. 2. By insisting on the doctrine of universal gravitation, he has confounded under the same law, bodies whose properties are *toto cælo* different from each other : he has not only confounded matter solid and fluid, opaque and rare, active and passive, but even extended this unnatural law to the whole planetary system ; and finally concluded, that the motions of the heavenly bodies are governed by the same laws, as the rotten apple that fell from the tree in his garden, and which laid the foundation for the whole of the system. Had that tree, however, been immersed in water, and not in air, instead of the apples falling to the ground, they would have risen to the surface of the water ; and it is probable, that we should not have had at this day to complain of the universal principles which have been formed from a partial solitary fact."

Saumarez' Principles of Physiological and Physical Science, p. 407.

the associations he had gathered from Kepler, if not from more mystical writers (8). He saw

(8) That Sir Isaac Newton was acquainted with the occult philosophy, is well known. Chalmers, in his Dictionary, says, that "a desire to know whether there was any truth in judicial astrology, first put him upon the study of the mathematics. He discovered the emptiness of that study as soon as he erected a figure." That he discovered the fallacy so soon, is not probable; because it would require many experiments. It is well known, I believe, that he studied astrology and alchemy, for some time; and this is not to be wondered at, when many great men, near his time, had followed the like pursuits. Warton observes, "Who could imagine that Locke was fond of romances; that Newton once studied astrology; that Dr. Clarke valued himself for his agility, and frequently amused himself in a private room in his house, in leaping over chairs and tables; and that our author himself was a great epicure."

Warton on the Genius and Writings of Pope,
vol. 2, p. 186.

The celebrated Mr. Law traces the discoveries of Sir Isaac Newton to the works of Jacob Behmen. "The illustrious Sir Isaac Newton, when he wrote his Principia, and published to the world his great doctrine of attraction, and those laws of nature, by which the planets began and continue to move in their orbits, could have told the world, that the true and infallible ground of what he there advanced, was to be found in the *Teutonic Theosophus*, in his three first Properties of Eternal Nature: he could have told them that he had been a diligent reader of that wonderful author, that he had made large extracts out of him, and could have referred to him for the ground of what he had observed of the number seven. Now why did not this great man do thus? Must we sup-

difficulties in his system he could never solve, and

pose that he was loth to have it thought that he had been helped by any thing he had read? No: it is an unworthy thought. But Sir Isaac well knew that prejudice and partiality had such power over many people's judgments, that doctrines though ever so deeply founded in, and proved by all the appearances of nature, would be suspected by some as dangerous, and considered by others as false and wicked, had he made any references to an author, that was only called an enthusiast."

Law's Appeal in Answer to Trapp, 3d edit. p. 314.

A correspondent in the Gentleman's Magazine attempts a further proof of this statement, from a letter of Mr. Law's which he wrote for the satisfaction of some friend. "When Sir Isaac Newton died, there were found among his papers large extracts out of Jacob Behmen's works, written with his own hand. This I have from undoubted authority; as also, that in the former part of his life he was led into a search of the Philosopher's Tincture, from the same author. My vouchers are names well known, and of great esteem with you. It is evidently plain, that all that Sir Isaac has said of the universality, nature, and effects of attraction, and of the three first laws of nature, was not only said, but proved in its deepest ground, by Jacob Behmen, in his three first Properties of Eternal Nature; and from thence they are derived into this temporal out-birth. This, added to the information above, is, I think, a sufficient warrant for my having said, that Sir Isaac could have referred to Behmen for the true ground, &c. From the authority above I can assure you, that Sir Isaac was formerly so deep in Jacob Behmen, that he, together with one Dr. Newton, his relation, set up furnaces, and were for several months at work in quest of the Tincture, purely from what they conceived from him. It is no wonder then that attraction, with

upon which his commentators have never yet agreed (9). If you will take the pains to exa-

its two inseparable properties, which make in Jacob Behmen the first three Properties of Eternal Nature, should come to be the grand foundation of the Newtonian Philosophy. It is my *conjecture*, that Sir Isaac declared so openly at first his total ignorance of the same cause of attraction, to prevent all suspicion of his having been led into it from Behmen's doctrine. It is plain, he knew the deep ground which Behmen had given of it. No one, from Behmen, can know any thing of the Tincture, or the means and possibility of coming at it, without knowing and believing, as Behmen does, the ground of universal attraction : and therefore Sir Isaac's silence and ignorance of this ground must have been affected, and for certain reasons, which can now only be guessed at."

Gentleman's Magazine, vol. 62, p. 329. 1782.

To this letter an answer appeared in the same year, p. 576, written in a burlesque and rather humourous style ; but the fact has never been contradicted from the proper source—from those who had possession of the manuscripts. Mr. Law's authority will remain good, until a satisfactory answer is given. The papers of Sir Isaac were examined by the late Bishop Horsley. He declined publishing, and it is thought, most probably on account of his religious opinions. There was something, undoubtedly, to excite disgust, either philosophically or religiously."

Vide *Chalmers' Biographical Dictionary*, vol. 23. p. 132.

(9) I would advise you to read carefully the best commentators upon Sir Isaac's philosophy — such as Cotes, Clarke, Maclaurin, Pemberton, and Rowning. Let them be followed by Jones's First Principles of Natural Philosophy. What Newton was in mathematics, Jones was in

mine this subject minutely, and dismiss from your mind the bias you have received in favour

physics ; and no man ever followed the maxims of Bacon more closely. When he found that he was unable to draw any doctrine from these writers with precision, he sums up the evidence, or verdict if you please, in their own words, and leaves the reader to the exercise of his own judgment.

“ Sir Isaac Newton—“ Gravity exists and acts.”

Dr. Friend.—“ In explaining gravity, Newton has demonstrated it to arise from an *attractive force*.”

M. Maupertius.—“ It should be remembered in justice to Sir Isaac Newton, he has never considered *attraction* as an *explanation of gravity*. He considers it not as a *cause*, but as an *effect*.”

Mr. Cotes.—“ Gravity is the most simple of *causes*.”

Dr. Clarke.—“ It has often been distinctly declared, that by the term *attraction*, we do not mean to express the *cause* of bodies bending toward each other, but barely the *effect*, the *effect itself*, the *phenomenon*, or *matter of fact*.”

Dr. Desaguliers.—“ Attraction seems to be settled by the great Creator, as the *first of second causes*.”

Mr. Rowning.—“ When we use the term *attraction*, we do not determine the physical cause of it, but use it to signify an *effect* : nevertheless, to attraction, effects are *manifestly owing*.”

Sir Isaac Newton.—“ There are *agents in Nature* able to *make* the particles of bodies stick together by very strong *attractions*, and it is the business of experimental philosophy to *find them out*.”

Dr. Desaguliers.—“ We are not solicitous about the *cause of attraction*.”

Dr. Friend.—“ I believe *attraction* will always be *occult*.”

“ This is the result of my enquiry ; and if any person

of this celebrated theory, you will find the principle of attraction as much an occult quality as

should be so inclined, he is welcome to lay all the blame upon my want of understanding. But if these learned men, who are all vindicating the self-same principles of philosophy, had no clear ideas of what they affirmed, and could not understand *one another*, it is no wonder if the world should be at some loss to understand *them*."

Essay on the First Principles of Natural Philosophy, by the late Rev. W. Jones. 8vo edit. p. 70. 1763.

This book I consider as unanswerable ; and whenever the force of prejudice in favour of the popular system shall abate, I have no doubt it will obtain that consideration it so richly deserves. I have never known a person to read it, and capable of understanding the subject, who has not acknowledged the "reasonableness of an impulsive agency," and which is sanctioned by all the known discoveries in experimental philosophy. About four years since I was conversing upon this subject with a very eminent mathematician, a worshipper of Newton, and who knew almost every line of the *Principia*. I was free to confess my doubts of the fundamental points of the Newtonian theory. He replied in the usual way : "It was now settled upon irrefragable demonstration—nothing could occur to shake his opinion." I requested, as a matter of favour, that he would carefully read the above work, which I lent him, and then candidly express his opinion. When he returned it, he told me, "he had never before properly understood the argument." He had been misled by mathematical data, confounding those things in philosophy which ought to be kept separate and distinct. In his opinion, it was impossible to refute the clear and solid argument which it contained. Such was the result, upon the mind of one of the greatest mathematicians of the pre-

ever, and that it cannot be explained, because it is occult. Preserve in your recollection, the difference between mathematical and physical principles, and you will easily perceive it possible to apply mathematics to ingenious and visionary systems. It might as well be said to me, that the science of astrology is founded upon mathematical demonstration, as this celebrated theory of Sir Isaac Newton's (10). It has taken possession of the schools, much in a similar way to former theories, and is supported by prejudices equally strong, and as destructive to the progress of real science. He gave properties to matter—and he would not give them. Every

sent age, lately deceased. Happy would it have been for his own mind, and those connected with him, could he have been brought to examine the arguments in favour of revealed religion, with the same attention and candour. To that he was always averse; and he died, as too many abstract mathematicians die, *without God and without Hope*.

(10) It is possible to apply mathematical principles to imaginary systems. The science of astrology, in this respect, stands upon as good a foundation as the theory of attraction. Much sophistry has been employed, to combine them together. I have read, in an old astrological work, reasoning equally ingenious in favour of the division of the heavens, as any thing to be found in the best writers, upon this mystic doctrine of Sir Isaac Newton. I refer more immediately to a French writer on that subject...Morinus de *Astrologia Gallicæ*, folio, 1661.

edition of his optics gave it a new aspect, and the last is as obscure as the first (11). It was inherent or external, it was something or nothing, or altogether indifferent—a meteor, a spectre, which attracts our pursuit, and finally eludes our researches. No two commentators on Sir Isaac ever agree upon the principle, and with the most consummate talents, leave it where their master found it—a cause, or an effect, material or immaterial, mechanical or not mechanical. Take it which way you please; but you must not attempt to disturb it. It is a most invaluable principle, and much like the philosopher's stone in the crucible of the alchymist. There is not a variation, or an eccentricity that appears in the motions of the heavenly bodies, but what is easily solved, by an appeal to this mysterious and unknown principle. The indecision in the mind

(11) As a specimen of contradictory reasoning, and of the indecision of his mind, I would direct you to Newton's Optics, third edit. 1721. Query 31st. "Have not the small particles of bodies certain powers, virtues, or forces, by which they act at a distance?" But lest you should overturn this opinion, in the same query you have an apology, in this curious remark: "How these attractions may be performed, I do not here consider. *What I call attraction may be performed by impulse, or by some other means unknown to me.*" If it should be performed by impulse, attraction is a word altogether improper: it raises false associations in the mind, destructive of all sound philosophy.

of Newton upon the leading feature in his system of philosophy, has been productive therefore of the most injurious effects among those who have adopted his principles (12). It has given a peculiarity to the whole of the Newtonian system, which retards the progress of experimental knowledge. The knowledge which Bacon possessed of the economy of nature, showed clearly the absurdities which are more or less blended with such virtues and qualities, which are not only unnecessary but likewise unphilosophical (13). So that I adopt the words of Dr. Chal-

(12) "So long as you keep within the limits of physics, you must account for the motions of nature by referring them to *mechanical* causes ; and when this cannot be done, you must consider them only as *appearances*, till you shall have some further light by experience. Be not amused with *names* and *qualities*, which contradict the known laws of mechanism, and are used to supersede the *agency of the elements*." *Adams' Lectures*, vol. 3, p. 23.

(13) "Whatever is invisible, either in respect of the fineness of the body itself, or the smallness of its parts, is but little inquired ; and yet these be the things that govern nature principally, and without which you cannot make a true analysis and indication of her proceedings. The spirits or *pneumatics* that are in all tangible bodies, are scarce known ; sometimes they take them for a *vacuum*, whereas they are the most active of bodies ; sometimes they take them for air, from which they differ as much as wine from water ; sometimes they will have them to be natural heat, whereas some of them are cold ; and sometimes they will have them

mers, but in a very different sense ; “ that the same public who are so dazzled and overborne by the lustre of all this superiority, are utterly in the dark as to what that is which confers its chief merit on the philosophy of Newton.”

Indecision was the peculiar characteristic of his religious sentiments. Upon this subject it may be considered as uncandid to dwell. Some persons profess to be warm advocates for free inquiry, for fair and open discussion, and the admirers of religious liberty ; but if you touch ever so gently their peculiar sentiments, or happen to

to be the virtues and qualities of tangible parts which they see, whereas they are things by themselves ; and when they come to plants and living creatures, they call them souls ; and such superficial speculations they have ; like prospectives that shew things inward, when they are but paintings. Neither is this a *question of words*, but infinitely material in nature. As to the motions corporal within the inclosures of bodies, whereby the effects pass between the spirits and the tangible parts, which are rarification, colliquation, concoction, maturation, &c. they are not at all handled, but they are put off by the *names of virtues, nature, &c.* and such other words.” *Lord Bacon.*

“ The attractions and repulsions, the vis inertię and immaterial powers so much used by Newton, owe their birth to Kepler. The observations, geometry, and calculations he has annexed to them, are without dispute superior to the work of Kepler : but have the attractive, repelling, and immaterial forces, acquired a greater merit or reality, than they had before, for having been put into better company ?”

Abbe Pluche's History of the Heavens, vol. 2, p. 156.

throw out the least reflection that might cast a shade on the cause they espouse, they become angry and indignant. It is not then the cause of truth and liberty, that is so much at heart, but the cause of their particular denomination. Such characters, give them once power, and they will become tyrants. The author of a pamphlet (14) in reply to Dr. Chalmers, is either very ignorant, or wilfully blind as to the religious sentiments of Sir Isaac Newton. Dr. Chalmers is extremely delicate, and seems desirous to give panegyric, rather than to state the simple truth; yet with all this delicacy we are told by this redoubtable champion, that the "admirers of Newton, and all the lovers of truth, will feel their blood mantle their cheeks, when they witness from the pen of one whose laboured panegyric, if it added not to Newton's fame, at least pledged the writer to defend him from calumny; when they see from such a one an obscure insinuation that Newton was infected by some expiring heresy (15)." Upon this account he is very indignant; and therefore published his pamphlet. He considers it without foundation, that Newton "did not believe the fundamental doctrine of Christianity;

(14) "A free critique on Dr. Chalmers' Discourses on Astronomy, or an English Attempt to grapple it with Scotch Sublimity." 1817.

(15) Ibid, p. 34.

and this not only without authority, but in the very teeth of the document, on which those who assert it profess to found it." But what authority does this writer quote? None. If he is a mathematician, he ought to know that for every assertion, we require proof. If Sir Isaac Newton was an Arian, or a Socinian, or even a Deist, why should his professed friends and admirers be ashamed to own it? If Newton was not orthodox, why endeavour to impose a falshood upon future generations? Here is, I suspect, a little Socinian pride at the bottom, a pride that I have often witnessed. "Why it is true I am a Socinian, but I wish to be thought a genuine and orthodox Christian;—I don't like the name or odium attached to the party." But is there not positive proof that Newton was at least an Arian, or approximated very closely to the Socinian scheme? Is not the very proof established in the public mind, and apparent from his writings and conduct? I think it very evident (16). His

(16) Not only from the publication of "Two Letters to Le Clerc, on the Reading of the Greek Text, 1 John, 5, 7." 1654—but from other evidence, which is already before the public, and which is not contradicted. It is conveyed in a quotation from Chevalier Ramsay by Dr. Warton, and animadverted upon by Mr. Lindsey. "Sir Isaac Newton, a profound mathematician, but no metaphysician at all, was a sincere believer in christianity; but being carried away with a fondness to refine upon the antient heresies of the East, he

associates were chiefly men of that cast and temper of mind, inclining more to the religion

revived Arianism by the pen of his famous disciple and interpreter, Dr. Clarke."

Vide *Biographia Britannica*, by Kippis, vol. 3, p. 606.

A fair and impartial statement was given by Mr. Lindsey; and as I like to speak from authority, I shall give it you. "Whether Sir Isaac Newton, Dr. Clarke's great friend, was of the Arian sentiments concerning the pre-existence of Christ, which was what the Doctor embraced, or rather believed his proper humanity, is uncertain. I have mentioned in another place *, some evidence of his being of the latter opinion. That he was, however, an *Unitarian Christian* †, although he conformed to the end of his life to the public Trinitarian worship, there can be no doubt. And though we might wish it had been otherwise, we must not take upon us to censure or condemn where we have no concern and are not judges; but only take care, that no authority however respectable misleads us. It seems to be owing to his natural shyness and modesty, and fear of being drawn into controversy, that this most eminent person never declared his sentiments on this important subject in his lifetime; and rather insinuated them indirectly, in those writings which were published afterwards. I find, however, that some who lived near those times, ascribed this blameable reserve to an over-cautious restraint for fear of persecution: for the anonymous author of a pamphlet of some repute, who wrote about twenty years after Sir Isaac's death, having mentioned Mr. Emlyn's sufferings in this cause, proceeds to say, "This persecuting spirit kept in awe and

* A Sequel to the Apology.

† Historical Account of Dr. Clarke, by Mr. Whiston, p. 8.

of nature, than of christianity. Newton was undoubtedly a professed christian, and conformed to the Church of England; but he did much, I fear, that has been very injurious to the cause of truth and sound christianity. He was afraid, or ashamed, or undecided. The creed which passes under his name and authority, is not the creed of one who had proper views of divine revelation. He did not submit his understanding to the authority and dictates of the holy Scriptures; he maintained sentiments that were altogether subversive of its authority. Upon this subject the sincere christian should be always ready to speak, with clearness, candour and precision. Who is Sir Isaac Newton, and what his authority, when put in competition with the Bible? What are all the opinions of the philosophers antient and modern, when compared to the authority of this book?—mere dust in the balance, and lighter than vanity. Is it any thing wonderful or extraordinary for eminent philosophers to be opposed to the religion of christianity? Some apology may be admitted. It was the fashion of the age in which Newton

silenced some extraordinary persons amongst us; Sir Peter King, Sir Joseph Jekyll, and the greatest man of the age and glory of the British nation. After which he points to Sir Isaac's then unpublished Discourse."

Gentleman's Magazine, vol. 56, p. 394. 1786.

lived, even among divines, to extol the religion of nature, and place it upon a wrong basis. Instead of its being the offspring, it was made the parent of revealed religion. All who taught philosophy in our public seminaries mingled it with sentiments of this kind. Imagination, and reason, and metaphysical speculation, were placed as standards of authority, and the human mind was left to float in the regions of doubt and uncertainty. The nature of human reason was not accurately defined, and what is called natural religion was easily substituted for the religion of the Bible (17). Many eminent writers

(17) Sir Isaac Newton's Creed, supposed to be written in imitation of the Creed of St. Athanasius.

"This Being governs all things, not as the soul of the world, but as the Lord of the Universe ; and upon account of his dominion, he is stiled the Lord God, Supreme over all. The Supreme God is an eternal, infinite, absolutely perfect Being ; but a Being, how perfect soever, without dominion, is not Lord God. The term God, very frequently signifies Lord ; but every Lord is not God. The dominion of a Spiritual Being constitutes him God ; true dominion, true God ; supreme dominion, supreme God ; imaginary dominion, imaginary God. He is not eternity and infinity, but eternal and infinite. He is not duration and space, but his duration of existence is present, and by existing always and every where, he constitutes duration and space...Eternity and infinity. Since every part of space, and every indivisible moment of duration is every where ; certainly the Maker and Lord of all things, cannot be said to be in no

of the present day, have very indistinct views of the nature of human reason and its proper office in the attainment of religious knowledge. I can-

time, and no place. He is omnipresent, not by his power only, but in his very substance ; for power cannot subsist without substance. God is not at all affected by the motions of bodies, neither do they find any resistance from the omnipresence of God. He necessarily exists, and by the same necessity he exists always and every where. Whence also it follows, that he is all similar, all Eye, all Ear, all Brain, all Arm, all Sensation, all Understanding, all Active Power ; but this not in a human, or corporeal, but in a manner wholly unknown to us, therefore not to be worshipped under a corporeal representation."

Vide *Gentleman's Magazine*, vol. 1, p. 202. 1731.

Here is a creed which may suit a Deist, but not a Christian. It may be philosophical, or metaphysical, if you please ; but it is imagination in opposition to the scriptures ; it is reasoning without data, and therefore without authority. The imagination of a philosopher is much of the same kind with the mystic, and scarcely more intelligible. If his religious creed be similar to his philosophical, and I really think there is an intimate connection between them, even the wanderings of his intellect, and follies of his imagination, may be the subject of panegyric. We are told by Dr. Chalmers, that " he deserves as much credit and admiration for those articles which he kept out of his creed, as for those which he introduced into it. It was the property of his mind, that it kept a tenacious hold of every position which had proof to substantiate it ; but it forms a property equally characteristic, and which in fact gives its leading peculiarity to the whole spirit and style of his investigations, that he put a most determined exclusion on every one position that was

not conclude this letter without a quotation from the late Bishop Horne, who has drawn the nicest distinction on this subject that I have seen ; a distinction which, if preserved in your mind, will save it from the grossest attacks of the infidel philosopher, and will lead you to the source of all real knowledge—the holy scriptures (18). “Reason, we say, was made to learn, not to teach. What the eye is to the body, reason or understanding is to the soul, as saith the apostle, (Eph. 1, 18,) having the eyes of your understanding enlightened. The eye is framed in such a manner as to be capable of seeing ; reason in such a manner as to be capable of knowing. But the eye, though ever so good, cannot see

destitute of such proof.” Discourses, p. 63. I make one excuse for the worthy doctor ; he was endeavouring to paint a fine portrait, for under his pencil even the negatives in Sir I. Newton’s character become extraordinary virtues.

(18) Horne’s Works, vol. 1, p. 88.

“ Thus infidelity is the joint offspring of an irreligious temper and unholy speculation, employed, not in examining the evidences of christianity, but in detecting the vices and imperfections of professing Christians. It has passed through various stages, each distinguished by higher gradations of impiety ; for when men arrogantly abandon their guide, and wilfully shut their eyes on the light of heaven, it is wisely ordained that their errors shall multiply at every step, until their extravagance confutes itself, and the mischief of their principles works its own antidote.”

Hall on Modern Infidelity, p. 13.

without light ; reason, though ever so perfect, cannot know without instruction. Therefore the phrase "light of reason," is improper ; because it is as absurd to make reason its own informer, as to make the eye the source of its own light ; whereas reason can be no more than the organ which receives instruction, as the eye admits the light of heaven. A man may as well take a view of things upon earth in a dark night by the light of his own eye, as discover the things of heaven during the night of nature, by the light of his own reason."

I am, Dear Sir,

Yours, &c.

LETTER VI.

ON THE INFLUENCE OF SIR ISAAC NEWTON'S PHILOSOPHY.

The mischief is not confined to philosophers, for the argument is got into other hands, and the popular illustrations that are now given to the sublimest truths of science, have widely disseminated all the Deism that has been grafted upon it ; and the high tone of a decided contempt for the Gospel, is now associated with the flippancy of superficial acquirements ; and which the venerable Newton, whose genius threw open those mighty fields of contemplation, found a fit exercise for his powers in the interpretation of the Bible—there are thousands and tens of thousands, who, though walking in the light which he held out to them, are seduced by a complacency which he never felt, and inflated by a pride which never entered into his pious and philosophical bosom, and whose only notion of the Bible, is to depreciate, and to deride, and to disown it.

DR. CHALMERS' Discourses, p. 99.

DEAR SIR,

There is an inseparable connection between sound philosophy, or true wisdom, and the sublime discoveries in the book of revelation ;

and that system, which draws our attention from this divine source of intelligence, ought immediately to be suspected as possessing some dangerous or some fatal tendency. As principle and practice mutually support and strengthen each other, so the speculations of the philosopher often have a powerful influence upon the faculties of the mind, upon the happiness of man in his present state, and upon his different anticipations of the future in the world to come. If the Bible be the word of God, all just views of the works of creation must coincide in some harmonious points, or possess some accordancy to the lineaments of sacred truth. When our knowledge of science is blended with the discoveries of divine revelation ; when it leads to devotion, to the exercise of christian feeling and principle ; when it produces admiration, gratitude, and thanksgiving ; when it calls forth the latent energies of the heart, expands every noble and generous sentiment ; when it leads to God, to holiness, and to goodness ; we may then indulge the hope that pursuits of this kind, and producing effects like these, are infinitely beneficial to our present peace and our prospects of future happiness. The bible teaches by a divine analogy ; it leads our thoughts to the works of nature. Through the medium of the visible creation, we are instructed in the nature of invisible realities. A right knowledge of the natural world

is essential to suitable and exalted conceptions of the spiritual world. Creation is a mirror, presenting imagery to our minds, pleasing, beautiful, and delightfully instructive, confirming the sentiment of the Apostle. *For the invisible things of him from the creation of the world are clearly seen, being understood by the things that are made, even his eternal power and Godhead.*

The Bible, Sir, is the source of all true religion in the world ; unless our views in theology correspond with that book they will be ever shifting, variable as the wind, and uncertain as the events in life. Take away the authority of this book from the conscience and the heart, and every man's mind becomes his own law, tribunal, and judge. You have no control sufficient to regulate his conduct. If the principles of science and philosophy do not harmonize with its instructions, or raise it in our esteem, or fix its discoveries more effectually upon our hearts, it is much to be feared that they will have an opposite tendency. Try your knowledge of science by this standard. Let the discoveries of Newton be examined by their practical, by their moral and religious tendency : observe their moral influence, not only upon yourself, but upon the minds of others ; and I think from considerable observation, that you will find they possess, instead of an attractive influence, a repelling

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force ; a tendency to carry off the mind into the vortex of infidelity. Such was its original tendency upon the minds of those who first received these discoveries ; and the rapid increase of modern infidelity may easily be traced to the same source.

Those persons who are at all acquainted with the age of Newton and his associates, and the objects they had in view, cannot be insensible to the baneful operation of these principles. If you examine the speculative notions of this celebrated man, the ideas he possessed of God, and of natural religion ; if you think candidly and seriously over his writings, you will perceive something adapted to lead the mind away from the divine authority and inspiration of the Holy Scriptures (1) ; something agreeable to Deism,

(1) I entreat your attention to the following query. " Does it not appear from phenomena, that there is a Being incorporeal, living, intelligent, omnipresent, who in infinite space, as it were in his sensory, sees the things themselves intimately, and thoroughly perceives them, and comprehends them wholly by their immediate presence to himself : of which things the images only are carried through the organs of sense into our little sensorium, are there seen and beheld by that, which in us perceives and thinks. And though every true step made in this philosophy, brings us not immediately to the knowledge of the First Cause, yet it brings us nearer to it, and on that account is to be highly valued."

Newton's Optics, p. 345.

Attend also to the conclusion of the whole of his re-

but not to the Gospel of Jesus Christ ; something to please the philosopher, but nothing adapted to the true condition of man. If a man's character is influenced by his particular friends and associates, we shall not judge the most favourably of Newton (2). It is desirable to have the

searches ; it appears to me, as if this were the primary object of his labours—to teach men religion without the necessity of a revelation. “ And if natural philosophy in all its parts, by pursuing this method, shall at length be perfected, the bounds of moral philosophy will be also enlarged. For so far as we can know by natural philosophy, what is the first cause, what power he has over us, and what benefits we receive from him, so far as our duty towards him, as well as that towards one another, will appear to us by the light of nature.” *Newton's Optics*, p. 381.

It is no want of charity to say, that men who can write such passages as these must have very defective views of the importance and authority of the sacred writings. These sentiments may be traced to another source, the ancient heathen philosophers, from whom no doubt, with little variation, he borrowed them. “ The opinion of an immense void, of an infinite space, of an undisturbed extension, in which God exists by diffusion, is probably an old antiquated notion of Democritus and the Atomists, which was circulated and confuted by Socrates, Anaxagoras, and all the philosophers who believed that the thinking essence was distinct from the material substance.”

Ramsay's Philosophical Principles of Natural and Revealed Religion, vol. 1, p. 68.

(2) I do not know that the veracity of Mr. Hutchinson was ever doubted—if the principles of his philosophy have been made the subject of odium and contempt. He expressly

names of great and eminent men on the side of religion, and as the advocates of sound doctrine

asserts, from personal knowledge of the different individuals, that their private views were hostile towards Christianity, and directed to heathenism, and that John Toland was the agent of the party, and friend of Newton. For this purpose he was sent to Holland, to publish a pamphlet, entitled the *Pantheisticon*, in 1720. It was published in latin. The design was to form a society of Free Thinkers, or of Philosophical Idolaters. The Newtonian system was the basis of these speculative dreams. An English translation appeared in 1751, which I have seen and read. Of this person I find the following account.—“ *John Toland*, the natural son of an Irish Priest, was educated a Papist, afterwards turned Presbyterian, and then a Deist : this pretender to scholarship was of a mean and despicable genius, without any one considerable talent but cunning ; which, however, he made so dextrous a use of, that it served him for judgment, learning, and every other accomplishment ; insomuch that he passed with many in Russia and England for a man of letters, and particularly for a great linguist. He was sent over by the fraternity of Deists on this side of the water, to propagate infidelity in Ireland, with appointments sufficient to support him in the rank of a gentleman ; he no sooner arrived in Dublin, than his zeal for so good a cause prompted him to too open an exposure of himself and his principles ; insomuch, that the clergy in that city taking the alarm, he had the mortification, the very first sunday after he set his foot on the Irish shore, to make one in an auditory, to which the preacher addressed a sermon, filled from beginning to end with severe but just invectives against him. Such treatment, in his own country, you may be sure, could not but ruffle one who was among the foremost of his own fraternity in conceit and

and of scriptural truth ; yet we ought never to forget, that the Bible stands upon an eminence

• *self-sufficiency.* In his passion he kept no measures, but ran into such indecencies, as soon made him ridiculous, and forced him to return in a huff before his money was out or he had done any thing for it. After his return, having supped by invitation with a wealthy Deist, a spoon was missing ; poor *Toland*, as it is said, was suspected of the fact by his brethren, not because they were conscious of better principles than his, but probably, because he was needy and an *Irishman* : after being thought capable of such an action by his own deistical friends, others cannot have a high opinion of his morals ; yet this person, despicable as he was, had a very important province committed to his pen by the club ; it was no less than that of proving Christianity to be not mysterious ; in which, under pretence of defending revelation against the charge of mysteriousness ; he set himself with all his might, to prove that God could never require the belief of a mystery, or a point too high to be accounted for ; and then with little more than mere assertions, and texts of Scripture, which he neither did nor could prove to be applicable to his purpose ; he by design, weakly shows, that nothing in the gospel dispensation is now mysterious, or incomprehensible. Although he abounds with professions of the highest regard for Christianity, yet he labours hard to prove the first ; but as to the last, touches neither on the Incarnation, nor the Trinity, leaving our religion to answer, after all, for those and other mysteries which he had been at so much pains to prove, could never be made objects of our faith by Almighty God. This author was under no necessity of endeavouring to write clumsily, or reason weakly, as is evident to any candid reader who peruses that part of his performance, where he intends to be demonstrative. Were not all the

far above the speculations of modern science, and all the dogmas of a visionary philosophy. We are repeatedly informed by Dr. Chalmers, that Sir Isaac Newton proceeded solely by the recommendation of evidence; and that wherever such evidence is wanting, "he shut against it all the avenues of his understanding (3)." I know perfectly well what he means; but yet I say, it is false reasoning: if this had been true you would have heard very little at this day of the Newtonian Philosophy. Take away the mathematical part, and little remains of experiment, or what more strictly attaches to natural

other deistical writers guilty of the same, or a like artifice, I should charge the spoon on *Toland*. He who in the mask of a Christian gets admittance into the minds of his readers, in order to steal away their principles of religion and honesty, not to enrich his own, but only to disfigure their minds; may, without a breach of charity, be thought capable of a theft, that puts something in his pocket."

Skelton's Deism Revealed, vol. 2, p. 340.

For a just character of the writings of Toland, I refer also to Leland's View of the Deistical Writers, vol. 1, p. 78. How far Newton was implicated in Toland's different missions I do not assert; but he is described as one of his particular associates. For a candid statement of the above, see also Jones' Life of Bishop Horne, p. 27, prefixed to his works. In the correspondence between Mr. Locke and Mr. Molyneux, there are some particulars related of Mr. Toland. It is very evident they were ashamed of their acquaintance.

(3) Chalmers' Discourses, page 64.

philosophy ; little else but conjecture and hypothesis. But all this fine declamation is taken for argument by the great majority of readers, and thus the human mind is led aside, and perplexed with doubts and theories, which rest only upon the most fallacious principles.

Whoever understands and admires the Newtonian Philosophy, especially the higher branches of it, such parts as attach to particular hypotheses, and what more especially are called new discoveries, cannot, if a friend to revelation, be insensible to its baneful operation and influence. Let any serious thinking person watch its operation on his own mind and character, and how easily is he drawn away by it into endless doubts and intricacies. It takes man from his proper station, and fills his mind with visionary projects, ever restless, always pursuing, and never attaining (4). If he admits the authority of the

(4) " The Supreme Being, who has been pleased to make man, has prepared a habitation for him. He then first made the earth where he intended him to lodge. He has so advantageously placed this earth, that it might have a share in the spectacle of the world ; and that being designed for the palace of man, heaven and the rest of the universe, meant it as an ornament and a covert. Let us not presume to speak of what God has made in other places ; since we have no manner of knowledge thereof. It is enough for us to know what concerns ourselves. God, from a necessary consequence of his intentions with regard to man, has introduced into the world that light, which was to render every thing visible in

Bible, it is often in a very confined and limited sense; it is in subordination to his new opinions, or the vagaries of a wild imagination. He is now enlightened, the child of reason, and professedly learned. His views of nature and of the divine perfections are not enlarged, but all his thoughts terminate in magnitude and extension. He knows little else, yet he recoils with fond pleasure and delight in the cobwebs of his own sophistry. It is well if he goes no farther. His mind is already doubtful, speculative, prepared to receive any fresh theory illustrated by mathematical lines and the Newtonian Philosophy. He is thus easily enlisted on the side of scepticism. Novelty is sufficient to attract the great mass of mankind, either in religion or philosophy. Soon they give up the only standard of truth, the proper criterion of judgment to correct all human errors—the word of God; and hence they become the sport of opinions, *are tossed to and fro by every wind of doctrine*. How easily do they thus fall a prey to every deceived and corrupted heart! Upon this subject I write from personal knowledge, observation, and ex-

it. He constructed the air which man was to breathe, and the fire which was to give him life. From the same scheme proceed the metals, salts, and all the terrestrial elements, which were designed throughout all ages to renew and maintain whatever should be necessary for the inhabitants of the earth." *Abbe Pluche's History of the Heavens*, vol. 2, p. 189.

perience (5). Our opinions in philosophy have great influence upon our religious sentiments. Between them there is a close connection. Those who enter with ardour, and pursue with avidity, the present system of astronomy, have many great difficulties to encounter, in order to preserve their christianity. They are compelled to dart forth into some new region of conjecture ; and the mighty conflict ensues—a struggle between duty and system, between the believer in revelation and the speculative infidel in modern philosophy. Conjecture is thus opposed to conjecture ; one vision is introduced to solve the appearance of a former vision ; fable is heaped upon fable, and philosophical romance upon philosophical romance ; while the elements of useful

(5) Till within these few years, the writer of these remarks was in the constant habit of, visiting the mathematical and philosophical societies in London. He has likewise been intimately acquainted with eminent mathematicians, and observed the tendency of their acquisitions, on the formation of religious opinion : and he does not scruple to assert the full conviction of his mind, that the admiration raised, especially in young men, by the development of hypothetical opinions, particularly in metaphysics and astronomy, unless counteracted by strong prepossessions in favour of revelation, generally have a dangerous tendency. It is what others may observe, if they please. There is nothing more in all this, than what we might fully expect, since the mind is generally influenced by the acquired taste, inclination, and habits, and particularly those of a scientific kind.

knowledge are thus often very much neglected. I consider the production of Dr. Chalmers as the necessary result of a mind convinced of the truth of the holy scriptures. Once he thought differently : but he is now compelled to meet his old prejudices and speculative notions. It contains the last sparks of the dying embers of hypothesis and doubt, which once rankled in his breast, now overcome by the superior light and strong effulgent beams of sacred truth. Let his future pursuits be influenced by that light, and he may live to see that the Bible is the best guide to true philosophy, the only data for sound thinking ; containing the best materials for all that is valuable and excellent in human life, while it remains the best instructor for the life to come.

The Newtonian system not only excites sceptical notions in the human mind, but it gives properties to matter, which lie at the foundation of all the atheistical systems, whether ancient or modern ; and from hence I assert its dangerous tendency. I have already stated what I conceive to be the leading feature in this system—the theory of attraction—a principle founded in absurdity. It is this very absurdity, which gives to infidelity some of its strongest arguments. It goes back to sources like these to instil the destructive poison into the human heart. The principle of attraction, or the vestiges of an obscure hypothesis, are received by

the majority of people with the same attention as an axiom in the science of geometry. It may be called an abuse of the Newtonian theory, if you please ; but it is an abuse that was almost immediate, and early foreseen, even upon its first reception (6) ; an abuse sanctioned by Voltaire, which has been continually increasing, particularly among the French philosophers, and which, I am much afraid, will yet increase ; an abuse of the most awful and destructive kind, which spread the most combustible materials, and which has since, by the aid of a poli-

(6) " The greatest abuse of the Newtonian system would be, thinking that the attraction and the centrifugal force have constructed nature, disposed the planetary world, given a moon to the earth, four satellites to Jupiter, and five small moons and a ring to Saturn. 'Tis true, Newton never taught any such thing : far from it. He, on the contrary, positively says, that the order of the world must not be derived from any other cause but the will of God, and that it would not be acting like a philosopher to pretend, that the laws of nature which may preserve the world, have been able to fetch it out of the chaos, or to put it in order. But Whiston and some other Newtonians, although with some difference among themselves, yet have thought that the attractive force, whereof they had not the least demonstrative proof in the things they knew about them, was inherent in every particle of matter, and that this force had been sufficient to form all sorts of elements, then our world, and all the others with these elements."

Abbe Pluche's History of the Heavens, vol. 2, p. 169.

tical match, lighted up the flames of the French Revolution. It produced a political volcano, the eruptions of which have not altogether subsided ; and the crater remains, the terror of all Europe, and a warning to the world. This may appear strong language to persons who have not read or thought much upon the subject ; but of its truth I am fully persuaded :—for the evidence of it, abundant proofs may be easily selected, in the annals of French literature (7).

(7) Lest you should suppose that I deviate from authority, I refer you to a work, published some years ago by Mr. Delaplace, who was considered one of the greatest ornaments of the French academy of sciences. He published the *Système du Monde*. In it he introduces this observation, after a panegyric upon Newton : “ That a gravitation inversely proportional to the squares of the distances, was the only principle which could unite material Nature into a permanent system : ” and then concludes with this reflection, which is a fair specimen of what is found in the French philosophy. “ Beheld in its totality, astronomy is the noblest monument of the human mind, its chief title to intelligence. But seduced by the illusions of sense, and by self-conceit, we have considered ourselves as the centre of these motions ; and our pride has been punished by the groundless fears which we have created to ourselves. We imagine, forsooth, that all this is for us, and that the stars influence our destinies ! But the labours of ages have convinced us of our error, and we find ourselves on an insignificant planet, almost imperceptible in the immensity of space. But the sublime discoveries we

From the age of Voltaire, until the time of Volney (8), you have a long succession of bril-

have made, richly repay this humble situation. Let us cherish these with care, as the delight of thinking beings : they have destroyed our mistakes as to our relation to the rest of the universe ; errors which were the more fatal, because the social order depends on justice and truth alone. Far be from us the dangerous maxim, that it is sometimes useful to depart from these, and to deceive men, in order to ensure their happiness ; but cruel experience has shewn us, that these laws are never totally extinct. Inhabitants of this peppercorn, we think ourselves the peculiar favourites of heaven ; nay, the chief objects of care to a Being, the Maker of all ; and then we imagine, that after this life, we are to be happy or miserable, according as we accede or not to this subjugation to opinions which enslave us. But truth and justice have broken these bonds."

See also Robison's Proof of a Conspiracy, p. 233.

The above extract gives you a fair specimen of the *perfection* given to the Newtonian philosophy, under the cultivating hand of these French astronomers.

(8) Conversing one day with ———, an eminent scholar, I mentioned " Volney's Ruins of Empires ;" and he replied, that he had visited the author of that book, while in Paris. He took him into his library. He looked round, put his hand upon several books, and said, " Here, Mr. Volney, are the sources of your novel opinions." He acknowledged to the Doctor, that he was right, and said, " I am not anxious about it." " Have you seen the reply of Dr. Priestley, and more particularly, that of an English Clergyman ?" He said, " No ;" and then spoke to this effect. " I have no interest in defending the book ; I do not pledge myself for the sentiments it contains. I was compelled to write, by desire of

liant spirits among the French philosophers, inoculated with this amazing theory of gravitation and attraction, who have exhibited the strangest absurdities, and given the most wonderful powers to matter, derived solely from this extraordinary hypothesis. The darkest ages that history presents to our view appear illuminated as it respects real knowledge, when you compare them with some of the *soi disant* philosophers, and the age of the French republic. The science of astronomy is the idol, to which they paid their devotions. To her they poured forth all the incense of their flattery. It led them into new and untried paths, from which they discovered fresh fields for speculation, and new sources for romance. Dr. Chalmers endeavours to give a christian turn to some of these ebullitions of vanity and flights of philosophical enthusiasm : but the attempt is vain. The natural tendency of these speculations is to carry off the mind from the discoveries of the sacred volume, and to tear up every religious feeling and sen-

persons in power. I was ordered to manufacture a revolutionary book upon the subject of Religion. I consider myself as a private in the ranks, obeying the commands of his superior officer." Such is the origin of a book, full of astronomical fable ;—a book which may injure persons of light and superficial reading, but can make little or no impression upon the minds of those who have been rightly instructed.

timent that may be lodged in the breast of man (9).

Turn your attention to England, the country that gave you birth ; to that country in which all your associations have been gathered, and where you have been taught the elements of knowledge, the principles of science, sanctioned by the pages of inspiration. Even in this happy island, the same principles have been nurtured and cherished, and taught by men of infidel attainments, and corrupted hearts. At the present moment, they are circulated at an easy and cheap rate, and read with avidity by a large portion of the different orders of society. They have been gathering strength from like causes, and they must produce like effects. By their fruits you may know them. These very properties ascribed to matter, however indescribable, uncertain, occult, and mysterious, are considered as axioms in philosophy, admitted so by christian divines, taught in their elementary principles, without a single restrictive caution ; and from

(9) " The giving of power to inanimate matter, is the strong hold of atheism ; it is the first step to exclude God from the world. I know no species of motion, the primary cause of which we can comprehend ; and yet philosophers have had the presumption to attempt a solution of the mysteries of the creation, and the government of the world."

Vince's Confutation of Atheism, p. 39.

such sources as these the sceptic collects his arguments, and barbs anew the blunted weapons of former controversy. The name of Newton, because of its powerful ascendancy, is brought forward to give currency to these sentiments; and natural religion, with all its appendages, is substituted for the pages of divine truth. The boldest writers against christianity have received their chief support from loose and unguarded expressions, used by christian writers in favour of deism; or what is more generally termed the law of nature, and the eternal reason and fitness of things (10). Between atheism

(10) "The book entitled "Christianity as old as the Creation," which is esteemed as one of the most able defences of Deism. It must be observed, that the author received his best support and strongest evidence from many passages extracted from our most eminent divines, in what they have injudiciously asserted concerning the law of nature." *Hodges on the Book of Job.*

Natural Religion, independent of Revelation.—Upon this subject I wish to be clearly understood. When natural religion is used to signify that sense of Divine Providence, which proceeds from just observations on the course and constitution of nature in the visible creation, I consider it then as valuable and important. If the book of Nature is compared with the book of God, you will find them subservient to each other: there is a correspondence and harmony, adapted to all the purposes of human life. They elevate the conceptions, and animate the best feelings of the heart. In this view, the writings of Bishop Butler, Dr. Derham, Dr.

and deism, there is an intimate and friendly connection ; there is a degree of approximation not seen by the individual, but no less certain ; the one is the path, the other is the termination of that path (11). If in the science of religion there are first elements, a commencement, a progress, a continual growth and advancement, so also in the science of infidelity. The human mind does not remain long stationary upon sub-

Paley, Mr. Ray, and some others, may be read to great advantage. To young persons, I would particularly recommend a little work entitled, "The Book of Nature," by the late Rev. W. Jones, F. R. S. I am always sorry to see eminent divines placing natural religion upon a wrong foundation, and reversing the order of the divine economy. I allude to passages like these. "As revealed is *founded* upon natural religion, it is of great importance to establish the latter upon clear evidence. We must be first persuaded of this, as a fundamental principle, *without which, all religion is vain*. A person under the influence of natural religion, feeling its imperfection, will be led to revealed religion for the purpose of satisfying his doubts."

Vince's Confutation of Atheism, p. 51.

To shew the falsity of such sentiments, I would recommend to your perusal, Delany's Revelation examined with Candor ; Ellis on the Knowledge of divine Things ; Theological Works of the Rev. W. Jones ; and Skelton's Deism Revealed.

(11) Mr. Wilberforce said, "that Socinianism was the half way house to Infidelity." It is true. In like manner, Deism is the half way house to Atheism. A confirmed Deist only need to read "Mirabeau's System of Nature," or more

jects like these ; it is either going forward or backward ; it is the path of the just, or that of the unjust ; it is shining brighter and more refulgent, or it is growing more obscure, or more awfully mysterious, until covered with a blackness which conceals from our view the lustre of all that is fair and beautiful, of all that is grand and magnificent (12).

properly, Diderot's *, or some book of that description, and if he possess a strong and inquisitive, or speculative mind, the termination is certain. It is as regular as cause and effect. When a man gives up the bible, he has nothing left, in the discoveries of science, that will preserve his mind from an awful and a mysterious uncertainty. All with him is doubt, conjecture, and a *darkness which may be felt*.

(12) " You are lavish in your praise of Deism ; it is so much better than Atheism, that I mean not to say any thing to its discredit : it is not, however, without its difficulties.

* " The author insists much upon the *morality* of Atheists ; but where could his own morality or honour be, when he was not only ashamed to avow his own work, but at the same time not ashamed to put another man's name to it, who had no knowledge of it whatsoever, and is said to have been very undeserving of being made its reputed author ? See *Dictionnaire Historique*, art. *Mirabaud*. A similar trick was played before, by another Frenchman, who published the most gross and obscene book that ever found a printer, in the name of a Spanish lady eminent for virtue and talents, who had been dead many years, and therefore was out of the way of vindicating her own fame. These anecdotes are for those free thinkers, who are so proud of the *honour* and *virtue* of their fraternity." *Dr. Nares*, p. 8.

That the chief admirers of Newton, those who may be said to have a full acquaintance with his philosophy, have generally renounced christianity and taken up with an avowed, or open profession of infidelity, I believe is a fact, which is almost universally and candidly acknow-

What think you of an uncaused cause of every thing ? of a Being, who has no relation to time, not being older to-day than he was yesterday, nor younger to-day than he will be to-morrow ? who has no relation to space, not being a part here and a part there, or a whole any where ? What think you of an omniscient Being, who cannot know the future actions of a man ? Or, if his omniscience enables him to know them, what think you of the contingency of human actions ? And if human actions are not contingent, what think you of the morality of actions, of the distinction between vice and virtue, crime and innocence, sin and duty ? What think you of the infinite goodness of a Being, who existed through eternity without any emanation of his goodness manifested in the creation of sensitive beings ? Or if you contend that there has been an eternal creation, what think you of an effect coeval with its cause, of matter not posterior to its Maker ? What think you of the existence of evil, moral and natural, in the work of an infinite Being, powerful, wise, and good ? What think you of the gift of freedom of will, when the abuse of freedom becomes the cause of general misery ? I could propose to your consideration a great many other questions of a similar tendency, the contemplation of which has driven not a few from Deism to Atheism, just as the difficulties in Revealed Religion have driven yourself, and some others, from Christianity to Deism."

Watson's Apology for the Bible, p. 36.

ledged (13). Doubtless there are some great and honourable exceptions ; but even among the persons excepted, there is a strong and latent bias in their opinions, which I consider as unfavourable to the principles of christianity, a bias greatly in favour of natural religion. If this be found generally the case, is it not then evident that there is something peculiar in this philosophy ? some tendency in the system which is hostile or repugnant to the genius of christianity ? Is it not clear that it contains something opposed to revealed religion, and to which its students, aided by all the learning, ingenuity, and argument of the christian philosopher, can never make it fully to accord ? Let not the admirers of the gospel revelation be deluded by the outward splendours, the imposing appearances in the science of astronomy ; “ those brilliances,” as they are here called, which attract the mind from the truth *as it is in Jesus* ; which seem to dazzle us awhile, and easily confound the understanding and unstring the finest chords in the human heart ! If the philosophy of New-

(13) It is acknowledged in Dr. Chalmers' Discourses, “ he was too well aware of the limit between what he knew, and what he did not know, to be seduced from the ground he had taken, by any of those brilliancies which have since led so many of his humble successors into the track of Infidelity.”

P. 86.

ton is found by experiment and fact to possess a dangerous tendency ; if it casts a glare and a seducing brilliancy around its apparent discoveries ; if it leads men to spurn the bible, with all the doctrine and piety of the bible ; if it infuses the spirit of Antichrist into many of the literary establishments of the age ; if it is that philosophy which has already produced the most disastrous effects ; if it is the active principle, the leaven which is diffused through all the atheism in France, in Germany, and in England, and even in the continent of America (14) ; if it furnishes infidelity with the strongest weapons and the most powerful arguments ; what then is the inference which we deduce from this reasoning ?—that whatever high pretensions this philosophy may have hitherto assumed, it is not that philosophy which accords with the discoveries of the bible (15).

I am, Dear Sir,

Yours, &c.

(14) *Vide* an interesting and copious account of the actual state of religion and morals in the United States of America, drawn from printed and private information, in No. 27, of the British Review for August, 1819.

(15) Discourses, p. 92.

I perfectly agree with Dr. Chalmers upon the “diversity of complexion,” among the votaries of Infidelity. “It looks

one thing in the man of science, and of liberal accomplishments—another in the refined voluptuary—another in the railer against priestly domination—another in the dark and unsettled spirit of him whose very breath is tinctured with gall—and another in the man of business, who has neither time, nor patience, for the details of the christian evidence.” Under all these varieties, we detect one and the same principle. Vide *Discourses*, p. 88.

LETTER VII.

ON THE PROPER BOUNDARY OF HUMAN KNOWLEDGE.

——— on that tree he also gazed ;
*And O fair plant, said he, with fruit surcharged,
Deigns none to ease thy load and taste thy sweet,
Nor God nor man ? Is knowledge so despised ?
Or envy, or what reserve forbids to taste ?
Forbid who will, none shall from me withhold
Longer thy offered good, why else set here :
This said, he paused not, but with venturous arm
He pluck'd and tasted ———*

MILTON.

DEAR SIR,

When a person of an inquisitive turn of mind and a romantic imagination, produces a speculative work on religion and philosophy, and adapted to the general taste of the times, the errors he may patronize become the more dangerous in proportion to the extent of his talents, the force of his reasoning, and the splendour of his arguments. He may be the idol of the public, but their idolatry is only an addition to the many evils which result from the

publication. The influence of such a name as Newton is almost unlimited ; but yet how few are capable of investigating his discoveries ! how few are able to examine for themselves, the force or propriety of his opinions ! The errors of modern philosophy chiefly originate from a total disregard to the only standard of principle and truth, a rejection of the light and authority of the holy scriptures. In the human mind there is an almost irresistible and boundless curiosity to penetrate the mysteries of nature ; a desire or passion excited in the pursuit after those branches of knowledge, which are wisely concealed ; a desire to retrace the past, and a more anxious desire to penetrate the future. What is novel and strange, seems “ to rouse the mind from its dormant state, by giving it a quick and pleasing impulse (1).” Hence we sometimes make the fruitless and ineffectual attempt, by a feeble grasp, to draw aside the curtain of the material world, which conceals from our view the invisible state. If that were possible, new wonders might yet remain to kindle the passions of the soul, to light up in the breast a celestial flame, ever burning and never to be extinguished, and which shall continue to burn through the countless ages of eternity. It was this unceasing curiosity, which

(1) Blair's Lectures, vol. 1, p. 105.

excited the labours of astronomers in past ages, to the study of judicial astrology. To attain some knowledge of this obsolete and conjectural science, has led many to the study of mathematics, and even to some of the most interesting branches of useful knowledge. To enlarge our views of the creation, to form imaginary pictures of other worlds, now calls up the zeal, and fires the imagination of the modern astronomer. It renders the science, in his apprehension, extremely fascinating. But most of these things are little better than childish toys ; and were it possible to ascend to what is considered the height of the surrounding atmosphere, another scene would perhaps open, altogether different from any we have been taught to expect from the received opinions hitherto adopted among the greatest philosophers. Surrounded as we are with light and knowledge, yet how little do we really understand of the principal objects which nature presents ; of matter, motion, and spirit ! When we have attained the utmost limits, we hear a voice saying,—*Thus far shalt thou go and no farther.*

“ Man know thyself ; all wisdom centres there.”

Our knowledge of matter is necessarily limited. I see, I feel, I taste ;—but what is it that is really passing about me ? I cannot say where it begins, and I cannot tell where it

ends (2). Every thing is wonderful—the heavens—the air—the elements—the earth—the sea—all is grand beyond conception. Though we taste, and see, and feel, yet we cannot pursue the inquiry; it for ever eludes our researches, and the *substratum* is lost in the refinements of the philosopher (3). The powers of reason terminate in some non-entity, which is altogether inexplicable, and we are compelled to take our station in the back ground, with the ignorant of mankind; and common sense is found the most formidable opponent (4).

If such be the case as to the substance of

(2) "It would seem to me a waste of time, to detail to you the reports of various microscopical observers, respecting the ultimate fibres of muscles, since there is so little concurrence or certainty in their descriptions. The opinions which such contradictory statements have impressed on my mind, is, that perhaps the ultimate arrangement of matter, like its ultimate particles, may form a subject too subtile for human perception." *Abernethy on the Theory of Life*, p. 24.

(3) The heavenly bodies may be very different to what our senses, unassisted by the imagination, may represent. We all know the sentiments of good Bishop Berkley, and his speculations on matter. I am no disciple of that amiable prelate, but I very much revere his memory, and perceive the force of his arguments. When we separate the qualities of matter, what remains? the conclusion which he attempted to establish is the natural result of Mr. Locke's reasoning.

(4) Reid's *Essays*, vol. 1, chap. 10.

matter, the qualities it may possess, and the appearances it may assume, are still more inexplicable. Here, doubtless, conjecture and uncertainty follow us every step. If matter exists, which is evident to our senses, it is subject to change and alterations, equally wonderful. We trace it in the plant, the animal, and man; in every object by which we are surrounded, under all the forms and varieties which engage our attention: but we cannot detect the first element. We approach it by our reasonings, and it instantly disappears. The first particle, the atom, is invisible. If it may be divided without any limits that we can determine, we must allow it to be indefinitely divisible. To affirm, however, that it is infinitely divisible, is one of the conundrums in philosophy, supported by an abstraction of thought in geometrical demonstration, not applicable to nature, or visible extension, and like all the other mystic names given to matter, equally unintelligible. It is pregnant with absurdities and difficulties, which are monstrous and contradictory (5). But if matter,

(5) "Mathematicians are wont to illustrate their thoughts by lines, and their properties; and they sometimes give the name of demonstration to their arguments when they are nothing more than illustrations, or diagrams, which express the mind of the illustrator, but prove nothing. According to the different lights in which the subject is considered, the

considered abstractedly, is so difficult to comprehend, its mobility is equally incomprehensible, and like its substratum, for ever escapes our penetration. There is something in it yet to be explained. That the primary cause of motion is the power of God, is the doctrine of the holy scripture; and no principle of knowledge is more clear, or more certain. But we perceive an intermediate agency in the methods of Providence, and in the operations of Nature (6). Throughout the whole system, there

application of different lines will lead to contrary conclusions. It would be easy enough to shew on such principles, that a given quantity of matter is both finite and infinite; that it may be divided without end, and that there must necessarily be an end of the division. Therefore, it is safe on many occasions to be guided by reason and the nature of things, at least in matters of argumentation, rather than by diagrams, which are applicable to contradictions, and may indeed be accommodated to any thing."

Jones's Physiological Disquisitions, p. 5.

Read the whole discourse on Matter. Also Adams's Lectures, vol. 3, lecture 24; and Bishop Berkley on Human Knowledge. Also Newton's Optics, query 31. When you have read these, you will think very little about the infinite divisibility of matter.

(6) *Matter* hath a *capacity of motion*, not an ability to move; neither doth any matter act, but so far as it is acted upon. The trumpet hath a capacity of sounding, but never till it is sounded; of itself it is dead and silent, and would, if left to itself, remain so for ever. To invest matter with any innate powers, call them by what names you please, is

is a constant action and reaction, a connected chain of secondary causes, moving in beautiful harmony. To contemplate the motion of a

as contrary to the real nature of matter, as to suppose that all trumpets are born with lips, and lungs, and breath of their own. A stringed instrument hath the capacity of sending forth all possible harmony ; but it must first be acted upon, either by the vibratory motion of the air, or immediately by the hand of the master. Such then is the mobility of matter ; it is a capacity of being moved and acted upon, but no mobile faculty of any kind within itself."

Adams' Lectures, vol. 3, p. 16.

From this fertile source of speculation, you may trace most of the errors in antient or modern philosophy—qualities are given to matter which are mysterious and occult. Hobbs supposed that every material atom is endowed with the faculty of sensation, but that for want of memory, each sensation is only momentary. Dr. Priestley derives the materiality of the human soul from sources like these, divesting matter of its solidity, and then reducing it to centres of attraction and repulsion. Dr. Hartley assumes a vibrating power in matter, and then attempts to account for the power of association, from something material. It is easy, from such premises as these, to erect any theory, if men are not guided in their inquiries by the supreme and governing authority of the holy scriptures. To neglect this source of instruction, upon every thing connected with religion, is to expose the weakness of the human understanding. If you take away this pillar and ground of truth, you must build upon the sand. If you erect a beautiful superstructure, or even a tower like Babel, if its top should reach to heaven, the consequence is certain ; it will terminate in confusion. Such is the philosophy of materialism—a most unhappy

single atom, abstracted from the rest, is like examining the motion of a limb divided from the human body (7). Yet this is too much the

system. It derives its support from a like source with the atheist ; ascribing intellectual power to organized matter, and " smothering the distinction between body and spirit ; a system which has always had its advocates, but can recommend itself only to the half learned, inflated with the vanity of false wisdom."

(7) " It answers no purpose to consider the motion of any single body abstractedly, as a thing by itself, if there is in fact no such motion to be discovered. Speculations which carry us out of the world can never teach us how things are conducted in the world. Nature appears to be a system of parts connected and related, and every particular part of it should be considered under this relation ; without which, neither the nature, nor the design of it can be understood. Take the leg of a man, and consider it without any regard to the body it belongs to ; it will then have no meaning in it ; neither can he that examines it understand any thing more of it than its substance and figure ; which is only to know that it has make and form. But if you consider the same member with its relation to the body, then all these wonderful things discover themselves to us at once ; first, that its vessels are supplied with the animating fluids of blood and spirits, which keep up animal life in it : secondly, that its muscles are connected with the superior parts, from whence they derive their faculty of motion : thirdly, that it is framed with due strength, and exact proportion to the weight of the body, to preserve it in an erect position, and to transport it from place to place : fourthly, that it is enabled to do this effectually by its relation to the eyes, which receive light to direct all the motions of the body to their

practice with mathematicians and philosophers ; they study motion in a body without motion ; they construct a system of mere abstractions, which are altogether delusive ; and though sen-

proper ends. A limb considered under these relations becomes a wonderful subject, well worthy to be admired by the anatomist and the philosopher ; but if you take it out of the body and consider it abstractedly, it is dead, motionless, and useless ; except to the cannibal, who could make a meal upon it." *Jones' Physiological Disquisitions*, p. 30.

" We must argue in the same manner about motion ; that a body continues to move, only so long as the natural causes of that motion continue to act upon it ; and that rest, which is mechanical death, must inevitably follow, when the causes of motion are no longer present to it. There may be subtile cases, in which it is as hard to trace the cause of motion, as to shew why life remains some time in an animal body under water without respiration ; but still the general assertion must be true, that of every effect which is permanent, the cause must be so too. If life were preserved in any human body without air in the lungs, or any remaining vital warmth at the heart to keep up the fluidity of the blood, this would be an absolute miracle, not to be accounted for by any principles of mechanism, nor resolvable into the doctrine of physical causes. And it would be as great a miracle if an inanimate body were to move permanently without any permanent cause : or what is worse, it would rather seem to exclude the possibility of miracles : and I cannot but wonder it was never duly considered by modern philosophers, that neither the power nor the providence of God are necessary to that body, which moves to-day only because it moved yesterday. This principle leads naturally to atheism, and with very little difference, is the principle on which the Greek atheists built.

sible that some difficulties remain to be solved, yet they carry on the delusion by new speculations founded upon former conjectures, amidst doubt and difficulty, darkness and philosophical delusion (8). In all our researches about the

their system ; they gave to atoms an oblique motion, without any permanent cause ; which, together with innate weight, essential to their constitution, carried them through the whole course of their performances in the natural world."

Ibid, p. 34.

(8) " If, indeed, gravitation were not only known to be universal among material substances, but if all the other causes of motion could be reduced to it, and shown to be modifications of one and the same law, there would be little reason to expect that we should ever carry our inquiries much further ; and, though we should not think that there was any impiety in the attempt to do so, we should certainly despair of its success. But our knowledge of gravitation is rather shewn to depend on impulse, not impulse on gravitation. Two laws, very different from one another, direct the motions of the material world ; and till these two can be reduced to one, or shewn to depend on the same cause, or till they be demonstrated to arise from different causes, our knowledge of them remains incomplete. Till every possible means of effecting one or other of these purposes has been tried,—till reason and experiment can fairly be said to have done their utmost, philosophy has not reached its utmost object. Some important secret may still be within our reach ; some new proof of the simplicity of nature, and of the wisdom of its author, may yet remain to be discovered. In the present state of science, we think it cannot be affirmed that the utmost has been done with respect to the object we are

properties of matter, there is a line of circumvallation drawn, over which we cannot pass.

treating of; nor are we entitled to say, that the attempts made have been all completely abortive."

Edinburgh Review, vol. 13, p. 104.

"It is in vain to say that attraction is only an effect, a law to express something that we cannot comprehend; because it is continually introduced to establish principles so certain and effectual, as to destroy other conjectures and theories far more rational, and agreeable to the appearances in nature, than the one intended to be introduced. I will submit one example; it is from Archdeacon Paley—in the article *Astronomy*, in his *Natural Theology*. "Calculations were made a few years ago, of the mean density of the earth, by comparing the force of its attraction with the force of attraction of a rock of granite, the bulk of which could be ascertained; and the upshot of the calculation was, that the earth upon an average, through its whole sphere, has twice the density of granite, or about five times that of water. Therefore it cannot be a hollow shell, as some have formerly supposed; nor can its internal parts be occupied by central fire, or by water. The solid parts must greatly exceed the fluid parts; and the probability is, that it is a solid mass throughout, composed of substances more ponderous the deeper we go." So that this force of attraction given to matter, compared with another force of attraction, is to prove that the earth is not a hollow crust, and filled with water. It all depends, you perceive, upon this said attraction. If you wish to see a more unintelligible account of the combined effects of this said attraction, gravitation, and centrifugal force, I would recommend you to read *King's Morsels of Criticism*, vol. 3, Diss. 13. edit. 1808.

To this mixture of sentiment and imagination, I wish to

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We may apply geometry to certain appearances of the moving body, but it does not unfold the mystery. We may detect certain laws, but those laws only exhibit part of the phænomena. Who can describe the different modulations of the air, "at one and the same instant of time, and from different points of the compass, the the music of an organ, the roaring of cannon, the ringing of bells, and the crying of swine?" What mathematical reasoning will account for their being heard as distinctly, and at once, as if they were heard in succession? So many

add another extract, equally unintelligible. "If attraction be what Cotes, with many other Newtonians, thought it to be, a primordial property, it stood indifferent to all laws. If it be the agency of something immaterial, then also for any thing we know of it, it was indifferent to all laws. If the revolution of bodies round a centre depend upon vortices, neither are these limited to one law more than another."

Paley's Natural Theology, chap. 22.

"Gravitation, properly defined, is the pressure downwards which dense bodies produce, on such as are rare; and levity is the pressure upwards, which rare bodies produce on such as are dense; or in other words, the rise or fall of bodies in different moveable media, whether solid, liquid, or gaseous, altogether depends on the quantity of matter which those bodies severally contain, with relation to the quantities of matter which they displace."

See the whole of that valuable chapter, on the Gravity and Levity of Solids and Liquids, in *Saumarez' Principles, chapter 11, p. 238.*

complex motions, in one and the same fluid, from different distances, operating by various causes, and approaching the senses at the same moment, seem to confound our researches, and tell us to proceed no farther.

If matter is a subject of difficult investigation, how intricate are the laws and phænomena of the human spirit ! It is mind, which gives to matter all its beautiful variety ; and forms, the most engaging and impressive, are presented to our notice : and all these objects give us in return some corresponding impression, and thus influence the passions and affect the heart. Our perception of external objects is involved in mystery. Different theories have been invented, but the subject is still intricate. How far intermediate objects combine in their influence, it is not very easy to ascertain (8). If sensible objects are thus involved in mystery, how much more the nature and properties of the human soul, and a spiritual subsistence, which can only

(8) "Plato's subterranean cave, and Mr. Locke's dark closet, may be applied with ease to all the systems of perception that have been invented : for they all suppose that we perceive not external objects immediately, and that the immediate objects of perception are only certain shadows of the external objects." *Reid's Essays*, vol. 3, chap. 7.

Let me beg of you to read Bishop Browne's Essay on the proper Limits of the Human Understanding ; and Thoughts on Divine Analogy. 1728.

be represented by imagery drawn from the natural creation. The resemblance must be traced by some standard of authority, because ideas of spiritual things are not immediate. The Bible is the only criterion of truth, on subjects like these ; it is to that book we must constantly appeal. *There is a spirit in man, and the inspiration of the Almighty giveth him understanding* (9). No satisfaction can be derived from the perusal of all the controversies upon the subject of materialism ; it leads the mind into a cave like that of Plato, where all is enveloped in darkness. If the Bible will not afford you satisfaction upon points like these, in vain will you seek it from any other source. From the most ingenious and laboured disquisitions, you will return to the volume of inspiration, and be ready to exclaim—*The entrance of thy word giveth light* (10).

(9) The Hebrew word רוּחַ — *wind or air is motion*, is the most immaterial object in nature. That word affords us, therefore, the best image of mind or spirit. See Parkhurst, under the root רוּחַ.

(10) The chief design of Dr. Hartley, in his very ingenious work on Man, is to explain and apply the doctrines of vibration and association. Allow him the first element in his reasoning, and his deductions are accurate. The doctrine of vibration, like the subject of attraction, is borrowed from Sir Isaac Newton. The influence of association over our opinions and affections is clearly seen and felt : but vibration

To those who have watched the progress of inquiry, and of public opinion, as to the speculations on matter and spirit, it must be apparent, that great exertions have been lately made by some men of eminence and science in favour of materialism. A few popular writers have given sanction to a refined species of philosophical infidelity, which has been imperceptibly growing among the different members of the learned professions, especially among the disciples of the medical art; and which, if not checked, bids fair to prove of the most disastrous consequences. The evil is daily increasing, and if it continues to move in the same rapid progression, it must finally overwhelm a great mass of our fellow countrymen, who at present are altogether ignorant, or careless, as to the existence of this controversy. Vitality and intellection are supposed to result from some unknown, but peculiar modifications of organized matter (11). The

and attraction, are names given to principles which are alike conjectural.

(11) "Nothing, but a perverted way of thinking, could have led philosophers, such as these, to ascribe to matter, independently and abstractedly from the energy and participation of life, the power of organization; or to have referred to this organization, the source of life, as its cause. It is evident, indeed, that these gentlemen move in an inverted order, and end where they ought to begin; they begin, by making power to arise out of weakness; symmetry and

sentiment is now handed about among the multitude, as a thing which is certain, and founded upon physiological evidence ; it is circulated with all the zeal of party enthusiasm. To what extent the diffusion of these and similar principles may yet be attempted, providence can alone foresee and determine : the consequences must be fatal to the progress of christianity in the world, and dreadful to the legitimate government of the country. It is the duty of every well informed and religious mind, to repel these insidious attempts, and the unblushing ardours of the philosophical infidel, which are ultimately directed to the subversion of all social order, and the complete extirpation of religious feeling and sensibility from the human mind. These sentiments are received by persons of little information, and who take them upon trust, without examination, or any diligent or impartial inquiry. Let a few inquiries be put,—and the

order, from that which is naturally formless and motionless ; and finally, design and intelligence, the attributes of things void of all consciousness, and destitute of all sensation. Instead of making organization the effect of life, they make life to be the effect of organization ; instead of making the phenomena of organization the end, they make it the primary and efficient cause, in which life virtually originates and abides,—the source of life, indeed, at its termination."

Saumarez' Principles of Physiological and Physical Science, p. 91.

mystery is developed. Have these authors any thing new to propose, for the attention and conversion of mankind? The manner is new—the subject is indeed presented in a novel and attractive form, with some irrelevant facts, just as they are imported from France, the land of fancy and speculation ;—but as to the real state of the inquiry, it remains as much concealed as in former times. Did not Lucretius, two thousand years since, inform the world that the soul is corporeal and divisible ; that it consists of vapour, and air, and heat ; that it grows up, is mortal, and perishable with the body (12)? Was not this system of confusion and pagan darkness expelled by the light of christianity, and the diffusion of the Holy Bible? And are we to travel back again to the dark ages, and to those times of ignorance, by the aids of modern chemistry and physiological inquiries? Upon this subject it may be necessary and sufficient to observe, that the most learned disputant and able philosopher has not any thing new to propose, of sufficient importance to gain the public attention. Not a spark of light has been elicited by all the reasoning, and all the doubt, with which the public mind has been agitated. It is one of those subjects, which is placed beyond the limits of human discovery ; and the light we

(12) Vide *Lucretius, Lib. 2.*

possess, has been conveyed solely through the medium of a divine revelation. We may assert, with confidence, and the sentiment is reasonable, and sanctioned by the soundest philosophy, that man uninstructed, by the single application of his own powers, would never have arrived to the attainment of the opinion, that the soul is spiritual and immaterial(13). Like every other truth of revelation, the sentiment, when once known, appears intelligible, and agreeable to the desires of the rational nature, and disposes the mind to the most refined and exalted feelings of adoration and gratitude. The fact thus discovered is ca-

(13) " We have the ideas of matter and thinking, but, possibly, shall never be able to know, whether any mere material being thinks, or no ; it being impossible for us, by the contemplation of our own ideas, without revelation, to discover, whether omnipotency has not given to some systems of matter fitly disposed, a power to perceive and think, or else joined and fixed to matter so disposed, a thinking immaterial substance : it being, in respect of our notions, not much more remote from our comprehension to conceive, that God can, if he pleases, superadd to matter a faculty of thinking, than that he should superadd to it another substance, with a faculty of thinking ; since we know not wherein thinking consists, nor to what sort of substances the Almighty has been pleased to give that power, which cannot be in any created being, but merely by the good pleasure and bounty of the Creator."

Locke's Works, vol. 1 fol. p. 253, 1759. Vide also
Ellis's Knowledge of Divine Things, p. 339, ed.
 1743.

pable of confirmation, which is more than can be said of any species of materialism, however refined by the subtilty of useless disquisition. It is confirmed by all that we know of the human mind,—by evidences which are strong and irrefragable of our individual feelings and convictions, and by the testimony of all ages (14). The properties of mind, are evidently distinct

(14) "The existence of our own mind, as something different and distinct from the body, is universally acknowledged. I say universally, having never heard of any nation of men upon earth, who did not in their conversation and behaviour, show, by the plainest signs, that they made this distinction. Nay, so strongly are mankind impressed with it, that the rudest barbarians, by their incantations, their funeral solemnities, their traditions concerning invisible beings, and their hopes and opinions of a future state, seem to declare, that to the existence of the soul, the body is not, in their opinion, necessary. All philosophers, a few Epicureans and Phyrhonists excepted, have acknowledged the existence of the soul, as one of the first and most unexceptionable principles of human science. Now whence could a notion so universal arise?—Let us examine our own minds, and we shall find, that it could arise from nothing but consciousness—a certain irresistible persuasion, that we have a soul distinct from the body. The evidence of this notion is intuitive; it is the evidence of internal sense. Reasoning can neither prove, nor disprove it. *Des Cartes*, and his disciple *Malebranche*, acknowledged, that the existence of the human soul must be believed by all men, even by those who can bring themselves to doubt of every thing else."

Beattie on Truth, Chap. 2, Part 1.

from matter—*sui generis*, and peculiar to itself. The powers of abstraction, distinct from the impression of the external object, is what can never be reconciled with pure matter. It must necessarily arise from something which is perfectly independent (15). To suppose the opposite

(15) “ The error has been acknowledged, by the best, and by the wisest men that have ever flourished in antient or in modern times : it has appeared to them that the attributes of mind, and of matter, are altogether different and distinct from each other ; that no modification of matter whatever, could account for the formation of the soul. It must be apparent, that if the soul is material, like the universal attribute which belongs to matter, it must be composed of parts ; that if it contains parts, it necessarily must be divisible ; that if it be divisible, it must likewise be decomposable and resolvable ; and if it be decomposable, it must be destructible ; and if it be destructible, it must be a composite ; and if it be a composite, it must have triple dimensions of length, breadth, and thickness, as the common attributes belonging to matter in general. If this were the case, the accumulation of ideas would necessarily be followed by an increase in the bulk of the organ, by which those ideas were received. It is, however, very evident, that so far from the attributes of mind producing or increasing the bulk in the body,—the body, by the exercise of the mind, is rendered more active and energetic ; that instead of manifesting to the organs of sense any sensible qualities, the mind is altogether insensible to them ; and instead of being nourished, like the organs of nutrition, the food which is congenial to its nature is such as flows from reason and understanding. It is, therefore, legitimate to conclude, that the soul is not corporeal, but imma-

opinion, is to fall into the greatest absurdities ;—it is to change the nature of matter,—to make that which is dead or inert, to have the properties of life and motion. We have as clear and distinct an idea of spirit, as we can have of matter ; the properties of each are equally well known, and the internal essence equally unknown. To establish the system of materialism, that the soul is pure matter, would require additional arguments, than what can be produced from physiological reasoning, and the experiments of the anatomist (16). If these gentlemen will obtrude

terial ; that it is simple, and without parts ; and consequently, indestructible and immortal : for dissolution can only arise from the separation of one part of a thing from another, but which can never take place, in a principle which is essentially simple.”

Saumarez' Principles of Physiological and Physical Science, p. 96.

(16) “ When we dissect the brain, and observe the different substances of which it is composed, and their different forms ; imagination, assuming the office of reason, would willingly assign a peculiar use to every part, and pronounce one to be the residence, or rather the instrument of memory ; another of abstraction ; a third of volition, &c. When a sensation is excited by the action of any substance upon the body, we immediately perceive upon what part of the body the substance acts, where the impression begins ; and as the impression is conveyed by the nerves to the brain, it is conceivable, that we might be so constituted as to perceive, with the same facility, in what part of the brain the impression

their speculations on the vulgar and the ignorant ; if they are insensible to the faculties which they possess, and the efforts of mind required in their professional attainments ; if they are determined to become brutes, in opposition to the dictates of revelation, and reason, and their own consciences,—let them if they please ;—but let them have the modesty to confess, that their knowledge is purely *negative* ; and that the materiality of the soul is more difficult to comprehend than the agency of mind, operating upon the organization of the human body (17).

ends. This, however, experience convinces us, we are not able to determine. The skill of the anatomist has demonstrated every process, explored every cavity, and would, if possible, have traced every filament of this inexplicable mass, of that wonderful and anomalous organ, placed on the doubtful confines of the material and spiritual worlds ! nor have the physiologist or metaphysician been less eager to discover or to assign to each part its peculiar office ; whatever may be due to the former for accuracy, and to the latter for ingenuity and zeal, we must lament that little knowledge has resulted from their labours. At this advanced period of science, when almost every subject has been illuminated by the experiments, the deductions, and even by the conjectures of the learned, we are not able to proceed a single step beyond the fathers of medicine, who, in the very infancy of our art, pronounced this inscrutable mass of organized matter to be the fountain or reservoir, the beginning and the end of the whole nervous system, where every idea originates, and to which every sensation is referred." *Sir Busic Harwood.*

(17) " Let the materialist examine well, whether he does

These remarks have a strong bearing upon the speculations of the modern astronomer, and his widely extended notions of the vast creation. He does not extend his views to worlds beyond

not feel something within himself, that acts from an *internal principle*; whether he doth not experience some *liberty*, some power of *governing* himself, and *choosing*; whether he does not enjoy a kind of *invisible empire*, in which he commands his own thoughts, sends them to this or that place, employs them about this or that business, forms such and such designs and schemes: and whether there is any thing like this in *bare matter*, however fashioned, or proportioned; which if nothing should protrude or communicate motion to it, would for ever remain fixt to the place where it happens to be, an eternal monument of its own being dead. Can such an *active being* as the *soul* is, the subject of so many powers, be itself nothing but an *accident*?"

Wollaston's Religion of Nature, p. 187, ed. 1738.

Indeed we may add, that the accountability of man, as a rational and moral agent, is overthrown by the doctrine of materialism. "The convincing evidence produced by Dr. *Boerhaave*, and Baron *Haller*, that every particle of the human body, solid as well as fluid, is in a continual flux, or frequently cast off, raises an anxious desire to conceive, wherein consists the identity of the moral and intelligent being which animates it.—Of this there appears to be no possibility of forming the least idea, without supposing the visible agent to be something exempt from corruption, or not liable to this frequent dispersion of parts; something, in short, substantially distinct from all these fleeting particles."—Letter prefixed to "the Evidence of Reason in proof of the Immortality of the Soul," p. 18,—a posthumous work of Mr. *Baxter's*.

this scene of matter, for his thoughts are not very spiritual ; but every little glittering spark in the heavens is made the centre of systems of worlds, the smallest traces of which are not discoverable, except in his own imagination. Did we fairly reason from what we know, some apology might be given for “such idle dreams ;” but our ignorance of the most common and familiar objects in life, ought to check the vanity and presumption of the human mind. The increase of these glittering objects in the canopy of the heavens, as discovered by the telescope, might lead us to opposite conclusions from the one which is generally adopted ;—that they are neither so large, nor so distant, as is commonly imagined. That they are of great use and importance in the system of nature, cannot be doubted by any one, who can appreciate the wonders of creation. But to point out their distinct uses, beyond their relation to the globe we inhabit, requires nothing short of a divine revelation. If we find it so difficult to comprehend an atom of matter, which is tangible, and ever open to inspection, and constantly within our reach ; let us not be so ready to unveil what God has kindly concealed, and to speculate about things altogether foreign to our situation and circumstances (18). Let it be re-

(18) “ When in scripture, the sun, the moon, the stars,

membered, that all imaginary speculations on the works of God, are generally very different from truth and reality (19). The history of philosophy is little more than one false hypothesis, giving way to another (20). What is true

and all the parts of the creation, are called upon to praise God, man is made the instrument. Though void of understanding and reason, they offer means for the exercise of both ; " they show the glory of his kingdom, and they talk of his power." *Vince's Confutation of Atheism*, p. 81.

(19) " If a thousand of the greatest wits that ever the world produced, were, without any previous knowledge of anatomy, to sit down and contrive how, and by what internal organs, the various functions of the human body are carried on ; how the blood is made to circulate, and the limbs to move ; they would not in a thousand years hit upon any thing like the truth. Of all the discoveries that have been made concerning the inward structure of the human body, never one was made by conjecture. Accurate observations of anatomists have brought to light innumerable artifices in the contrivances of this wonderful machine, which we cannot but admire as excellently well adapted to their several purposes. But the most sagacious physiologist never dreamed of them till they were discovered. On the other hand, innumerable conjectures formed in different ages, with regard to the structure of the body, have been confuted by observation, and none ever confirmed." *Adams's Lectures*, vol. 3, p. 60.

(20) " Conjectures, in philosophy, are termed hypotheses, or theories : the invention of an hypothesis founded on some slight probability, which accounts for many appearances in nature, has too often been considered as the highest attainment of a philosopher. If the hypothesis hangs well together, is embellished with a lively imagination, and serves to

and useful, is confined to a very small compass, and in every part, more or less connected with the discoveries of the Bible. The hypothetical opinions of philosophers who can treat that book with cold indifference, or silent neglect, or who can indulge in conjectures which would apparently militate against its authority, must be received at least with suspicion, and some hesitation, by every real friend to genuine christianity.

If it were possible to examine the influence of such opinions upon the devotional feelings of

account for common appearances, it is considered by many as having all the qualities that should recommend it to our belief, and all that ought to be required in a philosophical system. Men of genius are so prone to invent hypotheses, and others to acquiesce in them as the utmost the human faculties can attain unto in philosophy, that it is of the greatest consequence to the progress of real knowledge, that you should have a clear and distinct understanding of the nature of hypotheses in philosophy, and of the regard that is due to them. Although some conjectures may have a considerable degree of probability, it is evidently in the nature of conjecture to be uncertain. In every case, the assent ought to be proportioned to the evidence ; for to believe firmly what has but a small degree of probability, is a manifest abuse of our understanding. Now though we may, in many cases, form very probable conjectures concerning the works of man, every conjecture we can form with regard to the works of God, has as little probability as the conjectures of a child with regard to the works of man." *Ibid.* vol. 1, p. 59. 1794.

the heart, some conclusions might be drawn, both interesting and important. That philosophy which is unfavourable to real devotion, and to the exercise of the best feelings, which draws the affections from an attachment to pure and undefiled religion, we may rest assured, must spring from an impure or corrupted source. Keep this maxim always in your remembrance,—That sound philosophy is nearly allied to genuine christianity. For my own part, I very much question whether the notions inculcated by Dr. Chalmers in these Discourses, are at all favourable to the exercises of devotion. If this subject has, however, occupied his thoughts, I should rather think it would afford him some perplexity. Enlarged views of the creation, which are merely hypothetical, may excite admiration and call forth astonishment ;—they may amuse, and afford room for sceptical doubts ; but they afford no reflections adapted to the exigencies of the human mind, and nothing to satisfy the anxious desires of the heart. How far they may be serviceable in what is called the study of Natural Theology, is much to be doubted (21). I cannot

(21) Even Paley seems to have some doubts, whether the science of astronomy is the best adapted to prove the agency of Deity. “ My opinion of astronomy has always been, that it is not the best medium through which to prove the agency of an intelligent Creator ; but that this being proved, it

suppose a merely speculative subject of opinion, has much to do with the affections or the passions of the soul. Intricate controversies and ingenious disquisitions on the origin of evil — on the purposes of the Almighty, and the free agency of man, are not, I think, very favourable to real piety and genuine religion (22). The metaphysical obscurity which envelopes the productions of writers of this class, is like a thick cloud intercepting the solar light. By their ingenious labours, religion and science suffer an eclipse; the face of nature is darkened; what is bright becomes obscure, and what is beautiful, is conspicuous only for its deformity (23). Dis-

shows, beyond all other sciences, the magnificence of his operations;" *Natural Theology*, chap. 22.

(22) "Great are the powers of the human mind, but her presumption is still greater. Not content to be employed upon such principles and materials as are provided for her use by Providence, and the natural state of things, in a slow and sober exercise, vainly presuming, by an action and operation of her own, to invent others of a superior order, by whose assistance she may soar with a rapid wing into the possession of the sublimest truths; buoyed up into the air by these self-inventions, she attempts unbounded flights into the fertile but delusive regions of imagination. Hence we often see philosophers led by trains of solid reasoning, to the temple of splendid and delusive errors."

Adams's Lectures, vol. 2, p. 112.

(23) Every new writer on the *origin of evil*, generally has the satisfaction of knowing, that after immense toil and la-

cussions on the nature of the soul, are much of the same description (24), and may be classed

bour he has left the subject just in the same state in which he found it.

(24) Des Cartes thought the soul was indivisible, something like a mathematical point. Dr. More said it was indivisible, yet he allowed it some room for expansion—a certain metaphysical amplitude. The Cartesians call it *res cogitans*, or *ipsa cogitatio*, never without actual thought. Mr. Locke, on the contrary, supposed the soul did not always think ; at least not in infancy, and under the influence of certain diseases. But who does not perceive that such discussions as these are beyond the proper boundary of the human intellect? Upon this subject consult Doddridge's Lectures, Part 1—the lectures on Pneumatology. I could easily furnish you with a list of books upon subjects of this kind, that would occupy half your life to read. They might exercise thought, and fill the system with wind and flatulence ; but the soul would be destitute of instruction. Not a particle of knowledge would be gained. It would be carrying you into a dungeon, and excluding the light of heaven. The works of Dr. Johnson are worth a cart-load of such rubbish. The following extract is a specimen of rational and scriptural metaphysics.

“The soul of man is confined in a material body, and obliged to take all its ideas of the spiritual world from matter ; so unless it is well informed of the nature of this material world, it would not be in a capacity to receive the knowledge of the spiritual ; and even when thus far capacitated or qualified, it could not obtain the knowledge of spiritual and immaterial things, unless the Author of both worlds was to point out what objects in the one resembled things in the other, or what were emblems here upon earth, of realities above in heaven. Hence it is, that throughout

with the ingenious reveries on the planetary system. It is altogether impossible to apply mathematical apparatus to bodies at such an immense distance, independent of a variety of other considerations. Keep, then, within the limits of useful knowledge, adapted to the condition of man in the present world. If you would contemplate nature, do not consume your time in particles and atoms and innate virtues ; but examine the variegated landscape, and the flowers which adorn the earth (25). View the starry heavens, not to discover what God has

the whole Bible there is not one immaterial, or mere metaphysical idea, proposed to the apprehension of man ; God very well knowing that he could not receive such, however some men may think they can : but all the ideas therein laid down are taken from sensible and material objects ; whence also it is plain, that this world, like the Tabernacle of old, was so framed and constituted, as to be the *pattern of heavenly things*." *Catcott on the Creation*, p. 94.

(25) It is very remarkable, that our blessed Lord never once directed the attention of his disciples to any thing like metaphysical reasoning, or the discussion of any intricate subject of inquiry—to the starry heavens or planetary worlds ; and yet he pointed to nature, in a way the most striking and impressive—with a grandeur and dignity, which while it invites, it likewise commands our attention. *Consider the lilies, how they grow ; they toil not, they spin not ; and yet I say unto you, that Solomon in all his glory was not arrayed like one of these* "A man may run himself out of breath, with his eyes in the air ; the flowers are at his feet."

concealed, but for the instructions they convey to man in the present state of his existence. Read the book of nature with the Bible in your hand; for without this commentary, the brightest scenery will be covered with a blackness and darkness, which all the penetration of science, and the eloquence of infidelity, can never illumine (26).

Do not suppose that I would repress further inquiries into the mysteries of Nature, or throw a damp upon the zeal and intelligence of inquiring minds. But I submit to your candour and experience, whether the disposition to dive into subjects merely speculative, and evidently beyond the reach of the human faculties, is not a disposition to be checked rather than

(26) As a specimen of this kind of illustration of nature, I would mention the 19th Psalm, by the late Bishop Horne; in which you may perceive that persuasive eloquence which awakens the feelings of piety, elevates the devotion of the heart, and at the same time enriches the understanding—sublime, instructive, and in which the christian and the philosopher are equally conspicuous.

“With respect to any direct advancement in the knowledge of our intellectual selves, to be derived from the different systems of pure metaphysics, independently of the Bible, it may be doubted whether, if the ploughshare of oblivion were to pass over the whole territory on which its various edifices have been reared, any serious loss would be sustained.” *British Review*, vol. 5, p. 459.

encouraged ? I ask it of you, because I feel the force and propriety of the question, and because I am persuaded that experience and age, and reading, and thinking, connected with an enlightened and sound understanding, will confirm the sentiment. Never forget the limits prescribed by the laws of nature and the dictates of revelation. To push beyond these limits is a vulgar intrusion—an approach which is insulting to the majesty of heaven. There is a boundary line drawn by infinite wisdom, upon the most intricate subjects in philosophy, matter, motion, and spirit, over which the human mind cannot pass with impunity : to reach it is the highest skill of human wisdom, but to pass it is daring impiety. Whatever writer goes beyond this boundary, however vigorous his mind or the capabilities of his understanding, or even exalted his piety, he cannot proceed with safety ; should he intrude into this unknown region, with the human spirit embodied in flesh, he is not suffered to pass ; he must be repulsed with shame and confusion. Though a giant in intellect, and a Sampson in strength, he must return, shorn of his locks, weak as a child, and contemptible as an idiot.

Infidelity is for ever changing its mode of attack, and seldom continues long in one and the same position. Like another Proteus, it assumes different forms and shapes. To-day we pursue

it in one corner, and to-morrow it appears in another. It seeks refuge in holes and caverns and secret recesses. Darkness is the aliment upon which it feeds. Sometimes, it is visible and open in its approaches, and at other seasons, it works by a mysterious and unknown agency. It will animadvert upon the mosaic cosmogony, and then seek refuge in fabulous history. It finds pleasure and amusement in the heathen mythology, and a ready credence is given to the Indian and Chinese fables (27). The hypothetical branches of astronomy are most convenient subterfuges for the votaries of Infidelity. At the

(27) A gentleman, who once filled an official post in India, and who had resided there some years, when he returned to England, seemed to give the preference to the idolatrous customs of the country he had recently left, and even to the Mahometan theology, rather than to Christianity. To the Bible he had the most utter aversion. His time, and talents, and learning, were solely occupied in collecting and reading books, which he was very assiduous in obtaining, merely to satisfy his conscience that the Bible was not true. It was astonishing to observe the books selected for this purpose—every thing that could obscure, and darken, and confuse. He never sought for evidence, as I often told him. He took great pains to become an infidel. At one time, he promised a long history of his life, with anecdotes of the principal characters in India; but I believe his chief object was, if possible, to convey the darkness of his own mind to the minds of others. Providence, however, has frustrated that design, and I suppose the whole will remain in its merited oblivion.

present moment, the science of geology is considered as a *dernier ressort*. It is acknowledged, that few studies are attended with more difficulty, and none, in which the subject is more complex; and yet this difficult, complex, and uncertain science, is to lay the foundation of atheism and the eternity of matter (28). Obscurity, however, is the region adapted to the constitution of the infidel and modern philosopher. Rout him from the dark recesses to which he has fixed his abode, and he will immediately take refuge in another, perhaps still more obscure (29). Bring him to the light, and he will

(28) The world is now filled with geological enquirers and disputants, who, though they are divided into two great parties, the *Volcanists* and *Neptunists*, yet these again are subdivided into innumerable sects, who agree in some things and differ in others.—Whether this earth was convulsed by means of fire, or of water, or by both, it never exhibited a greater variety of appearances than geologists have of theories. All is confusion; and the further they proceed, the less likely they are to come to any thing that approaches to certainty." *Monthly Magazine, Sept. 1819, p. 134.*

Vide also Brande's *Outlines of Geology, 1817*. The writer acknowledges the difficulty and complexity of the science; but he is assiduous in recommending the *theory of Whitehurst*: he does not immediately become the patron of atheistical notions, but he gives you directions how to become an atheist.

(29) If you ask, what material cause is to be assigned for the faculties of the human soul? The *Systeme de la Nature*

recede like the owl and the bat. He must retire to the midnight darkness. Here he finds safety—here he finds pleasure. Any branch of science, that will admit of different, and opposite conclusions; in which hypothesis may be indulged, and nothing proved, will always gain the admiration of those, who slight and neglect the sacred writings. The Bible affords the clearest intelligence upon every mysterious and difficult subject, so far as it is capable of illustration; yet it is rarely consulted; and if consulted it is not for the sake of instruction, or edification, but to elicit materials, which by an ingenious process may darken the understanding, and obscure every sentiment which christianity has hitherto imparted. Of such persons we may justly say, that *light is come into the world, but men love darkness rather than light.*

I am, Dear Sir,

Yours, &c.

tells us, it is the *phlogistic principle of the chemists*. These sceptics immediately find refuge in some obscure retreat, in some principle the most hidden and distant, and altogether inaccessible to the senses. See *Dr. Nares*, p. 9. .

LETTER VIII.

MATHEMATICAL AND ASTRONOMICAL INFIDELITY.

Devotion ! daughter of Astronomy !

An undevout astronomer is mad.

DR. YOUNG.

I have often thought, that the making experiments and calculating proportions, where no farther end is proposed by it, and it produces nothing but a stupid admiration, is a very low and servile employment for a man of genius. It is degrading the philosopher into the mechanic, and that the most useless and unprofitable of all mechanics. The wheelwright who can make a plough, and the husbandman who knows how to use it, deserve infinitely more of mankind than he who spends his time in measuring the tail of a comet, only to surprize and terrify mankind by a formidable range of ciphers.

BISHOP HORNE.

DEAR SIR,

It is very extraordinary to observe the insensibility of the human heart, upon subjects the most important and interesting, and essen-

tially connected with every thing valuable in the present state of our existence—with all our hopes, and fears, and prospects of happiness in the world to come. It has been well observed, that if the “christian religion is any thing, it must be every thing:” it has claims which are preeminent. These claims cannot be abrogated, by any real or supposed attainments whatever. To the man enlightened by science, by an enlarged or extensive acquaintance with the works of creation, the obligation is greatly increased. In proportion to the extent of our knowledge, must be the obligation to a right improvement of that knowledge. *Where much is given, much is required.* He who can trace, by calculation and art, the most difficult and intricate motions; he who can resolve the most ingenious questions in mathematical science; to such a mind, a survey of the divine perfections ought to be the more impressive, because they are the more distinctly apparent. But the reverse, I believe, is the melancholy fact (1). Men occupied in the

(1) “It is a common remark, however, that among men of eminence in the particular branches of science, scepticism prevails to a very considerable extent. The observation is by no means a just one, nor should the errors of a few, be visited upon the whole.”

Rennell's Remarks on Scepticism, p. 44.

I could hope the remark of this excellent writer had been according to his wishes, and agreeable to well known facts. I fear the contrary is true, and I think that my sus-

studies of science, in natural history, in anatomy, in mathematics, or the science of astro-

pitions are correct. We must form our opinions, not merely from books and abstract notions, but from a practical knowledge of men and things. The apology attempted in this chapter for the medical student, is excellent, and worthy of serious consideration ; yet I am compelled to observe, that the medical student is generally led by his physiological inquiries, from the perusal of Bichat, Lawrence, Sir T. Morgan, Richerand, and a few authors of that description.—I again assert—that much of the boasted philosophy of Newton, with some of the vacillating opinions of Locke *, which some christian writers are so anxious to eulogize, lie at the foundation of modern scepticism, and of the whole system of philosophical materialism. What is taught in the lecture room is easily imbibed, and not soon forgotten. Let medical lecturers recommend books entirely free from every taint of scepticism, such for instance as the physiology of Mr. Saumarez, and the practical effects will be seen in the opinions of the rising age. There are few of our medical professors and lecturers decidedly in favour of the superiority of mind over matter, as a thinking and independent principle. Mr. Abernethy, who is opposed to Mr. Lawrence, and who clearly maintains the distinctness and ascendancy of mind, yet confounds the principle of vitality—resolving the whole of life and of muscular action into “ a subtile, mobile, invisible substance, superadded to the evident structure of

* Mr. Locke confessed, that “ having considered the subject freely, and looked into the dark and intricate part of each hypothesis, he could scarcely find his reason able to determine for or against the soul's existence and activity, independent of matter.” *Locke's Works*, vol. 1, p. 573.

mony, are seldom impressed with devotional feelings, or offer up a single aspiration to that glorious being, who gave them existence, and who surrounds that existence with light and splendour, and by the constant displays of his unremitting kindness. It must appear extraordinary, and rather paradoxical, that men, possessing the most active powers of mind, and constantly occupied in examining the human frame, who hourly witness the most striking proofs of the existence, the care, and government of the Almighty, should likewise be of all others the most careless and indifferent upon

muscles, or other forms of vegetable and animal matter, as magnetism is to iron, and as electricity is to various substances into which it may be connected †." So that the reader is almost led, without a very clear analysis of the subject, to drop into similar views of the physical nature of the human mind, indulging a refined species of materialism, less apparent indeed, but no less opposed to the obvious discoveries of revelation, and the deductions of sound philosophy;—like Dr. Hartley, who conjectured of "an intermediate elementary substance, between the mind and the gross body, and which became the instrument of pleasure and pain to the sentient principle after death;" and which, very probably, led Dr. Priestley to the fatal conclusion, that "the mental powers are merely the result of an organized structure of the brain."

† Abernethy's Theory of Life, p. 39.

the great subjects of religion, and appear in general to possess an utter aversion to every thing like devotion. They will meditate on Deity, as a subject of abstract speculation : but exhibit to them the grand essential truths and obligations of Christianity,—endeavour to impress these truths upon the heart and the affections,—and you will excite disgust and abhorrence : there is something repellent, something which seems to say, “ We will think of it at a more convenient season. We regard the operations of Nature ; admire the combinations of matter ; but let us not for a moment think of the world to come.” Like the ancient heathen, Matter, independent of Deity, is the sole object of their adoration. It is an awful and melancholy truth, that minds wholly occupied with the arrangements and outward forms of material things, unless the heart is radically impressed with the great truths of Christianity, seldom go beyond them. During every waking moment they are surrounded by multiplied proofs of design and contrivance ; yet, through the perverse and depraved condition of human nature, they fall into a state of mental stupidity, concerning things of a spiritual kind, and sometimes sink into absolute atheism. There is nothing that will arrest the attention of man, or call forth the secret emotions of the heart, but the discoveries of the gospel. Remove these,

and the heart, with respect to devotional feeling, becomes cold and inanimate.

To have enlarged views of the creation, I mean as it respects the ideal magnitude around us, neither produces hope, nor confidence in the Divine Being (2). If I might be permitted to

(2) In the works of La Place, on the possibility of a comet's striking the earth, you have a specimen of that want of dependence on the government of God—that atheistical feeling and insensibility, which too often pervade our works of science. “The fears which the appearance of comets at one time inspired, have been succeeded by an apprehension of another nature;—lest, among the great number which traverse the planetary system in every direction, one of them should destroy the earth. But he says, they pass so rapidly near us, that the *effect of their attraction* is not to be feared. It is only by actually striking the earth, that they could produce the dreadful effect; but the shock, though possible, is so very improbable in the course of an age—it would require so *extraordinary a chance* for the concurrence of two bodies, so small in respect of the immensity of space in which they move, that no reasonable ground of fear can be maintained on this behalf. Nevertheless, *the small probability of such an event, if it be considered, with respect to a long series of ages, may become very great.* It is easy to imagine the effects of such a shock upon the earth. The axis and rotatory motion being changed, the seas abandon their former position, and rush to the new equator; great part of the men and animals drowned in this universal deluge, or destroyed by the violent shock impressed on the terrestrial globe; entire species annihilated; all the monuments of human industry swept

speaking from what I have seen, it would appear that many eminent mathematicians and skilful astronomers are devoid of sensibility, even upon the first elements of our holy religion. The discoveries they profess to receive, make no influence upon the heart (3). I do not wish to

away :—such are the disasters which might ensue from the shock of a comet."

Brewster's Edinburgh Encyclopædia, vol. 2, p. 700.

Can parents wonder that their children become infidels, after imbibing sentiments like these ?

(3) " The knowledge of nature hath been reputed a good mean to enlarge the soul and breed in it a contempt of earthly enjoyments. He that hath accustomed himself to consider the vastness of the universe, and the small proportion which the point we live in bears to the rest of the world, may perhaps come to think less of the possession of some acres, or of that fame which can at most spread itself through a small corner of this earth. Whatever be in this, sure I am, that the knowledge of God, and the frequent thoughts of heaven, must needs prove far more effectual to elevate and aggrandize the mind. When once the soul, by contemplation, is raised to any right apprehension of the divine perfections, and the foretaste of celestial bliss, how will this world, and all that is in it, vanish and disappear before his eyes ! with what holy disdain will he look down upon things, which are the highest objects of other men's ambitious desires ! All the splendour of courts, all the pageantry of greatness, will no more dazzle his eyes than the faint lustre of a glow-worm will trouble the eagle after it hath been beholding the sun."

Scougal's Sermons, Disc. 1.

be considered as making charges unfairly, but I greatly fear that very few can be considered as having that dependence upon God, which is becoming and consistent in a rational and intelligent being. Hence they indulge in wild speculations, altogether inconsistent with the enlightened views of a humble and believing christian. The most illiterate ploughman, who has been taught to know something of his Bible, possesses far more generous and exalted views of God, of his perfections, and of his providence. If you are acquainted with the works of any of these eminent men, you must perceive doubt, and terror, and darkness. The mind, continually employed upon vain hypotheses, loses sight of God and his government of the universe. The skilful astronomer, in all his ratiocinations and ingenious visions, seems to strike him out of the creation, and the whole is left to chance and uncertain destiny. Thus the christian peasant erects his building upon a rock, but the vain philosopher upon a mountain of sand.

That there is some very remarkable coincidence between the study of mathematics and the science of infidelity, I have not the smallest doubt. To me it is very evident. I have watched its tendency and progress upon the human mind, and know it generally produces a cold and sceptical influence, unless strongly counteracted by the warm and animating beams

of sacred truth (4). The mind solely occupied with the higher branches of pure and abstract mathematics, is indifferent to every other pursuit; and the most consummate ignorance is often blended with the profoundest knowledge (5). It is in vain to dissemble; the fact is so clear and self-evident, that it must be known to every observer who has been associated with persons of this description. The mathematical astronomer, especially, considers himself very profound and enlightened, and far more intelligent than the rest of the human species. A most striking contrast is observable between his opinions and character. He has mean thoughts of the world we inhabit; it is a mere speck in the creation, an atom which

(4) "An eminent mathematician attempted to ascertain by calculation, the ratio in which the evidence of facts must decrease in the course of time; and fixed the period, when the evidence of the facts on which christianity is founded, shall become evanescent; and when, in consequence, no faith shall be found on the earth."

Adams's Lectures on Natural Philosophy, vol. 2, p. 113.

(5) If the reader will consult Mr. Laplace's *Exposition du Systeme du Monde*, liv. 5, chap. 6, he will see his conjectures respecting the formation of the system; exhibiting a melancholy instance of human weakness in a man, whose powers of mind have enabled him to make those discoveries in the physical operations of nature which might have been thought beyond the reach of all calculation."

Vince's Confutation, p. 94.

might be blown off with a gentle puff of wind, and fall into the infinitude of space, in which it may wander through an eternity of ages. But this curious and inquisitive being, who lives and moves upon the surface of this atom of matter, amidst an innumerable multitude of other beings like himself, is of some consequence in his own estimation. He feels his importance; a sort of gaseous substance passes through every pore in his constitution, and he is inflated with an ecstasy of feeling—the ebullitions of pride and the corruscations of vanity. Pride is the moving spring of action in the soul, and the basis of all the infidelity in the heart of man. He is elated with himself, and not with the grandeur or magnificence of the universe. The world appears a bubble under his feet, but the bubble is discoverable in the human imagination; here it revolves and swells amidst the depraved affections of the heart, in a chamber of imagery, a system within a system, which he dares not fully explore; a system like the universe, boundless and unfathomable (6). While

(6) ——— “The coward flies;
 Thinks, but thinks slightly; asks, but fears to know;
 Asks, ‘What is truth?’ with Pilate; and retires:
 Dissolves the court, and mingles with the throng:
 Asylum sad!—from reason, hope, and heaven.”

Dr. Young’s Night Thoughts, N. 9.

he can expatiate upon unknown regions, in the ideal space which is infinite, his heart becomes inflated with pride and self-gratulation: pursuing the reveries of a philosophical enthusiasm, he loses all relish for the doctrines of Christianity; he wants that simplicity of mind, and humility of heart, essentially requisite to a right reception of its first principles. Wonder not, therefore, that you often perceive men of extraordinary talents and strong powers of intellect, aided by an immensity of learning, stumble at the very threshold of the gospel. The unlimited benevolence which it unfolds, and the strict purity which it inculcates, are repulsive to the depraved inclinations of the heart; and the very principles which command our attention, and ought to fill us with adoring gratitude, are the principles of all others the most neglected and despised, and become the subject of disaffection to the heart of man.

Of the advantages to be derived from the study of mathematics, and especially of geometry, no one is more sensible than myself. I had the happiness of being educated by one of the first mathematicians of the last age, to whose skill and attention I am greatly indebted. I consider the science of geometry as the most excellent system of logic, and calculated to rouse the latent energies and dormant faculties

of the human mind (7). When the definitions are clear, the premises correct, and the axioms appropriate, when a regular train of consequences is presented to the mind, a habit of reasoning is formed, clear, convincing, bold, and decided. The faculties are thus strengthened and improved, and rendered vigilant in exercise, and powerful in argument. But if the mind is wholly occupied in these studies, and more especially if the heart is not impressed with the great truths of christianity, I fear there is a certain and necessary tendency, between geometry and infidelity. If a young man pursues these studies, and blends them with metaphysical notions, which is very often the case, he becomes altogether indifferent to the powerful and commanding evidence of revealed religion. That evidence is as strongly pressing upon the human mind, as the science of geometry; but it is of a different kind, and is connected with the best feelings of the heart. The Bible does not adapt its discoveries to a mathematical or arti-

(7) "It is doubtless a great advantage to geometry, that its first principles are so few, its ideas so distinct, and its language so definite. Yet a captious and paradoxical wrangler might, by dint of sophistry, involve the principles even of this science in confusion, provided he thought it worth his while."

Beattie's Essay on Truth, p. 102, 4to. 1777.

ficial form of evidence, or to a chain of human reasoning. It is of a peculiar kind. It disdains the mechanical arrangements of science, and yet it speaks to the heart, *in demonstration of the spirit and of power ; that your faith should not stand in the wisdom of men* (8).

Those acquainted with mathematical studies, and the abstract speculations which are sometimes employed in the solution of different theories, cannot, I think, wonder at the tendency here stated, between geometry and infidelity. There is no necessary tendency ; but the tendency is excited by a peculiar habit and taste, formed under the influence of ingenious and curious disquisitions. The mathematician

(8) That the Bible does not fully accord with a mathematical form of arrangement, I think is self-evident to those who will make a few reflections upon the subject. It discovers a sort of incidental, or circumstantial evidence, which is far more convincing and satisfactory. You will perceive the force of this remark, if you read some passages in the works of Dr. Lardner, and compare them with those arranged by Dr. Paley in his *Evidences of Christianity*, and the former will be found much more convincing than the latter. I conceive this to arise from a peculiarity in the sacred writings, of their being immediately adapted to the wants and necessities of the human mind. Dr. Paley arranged some of the materials of Dr. Lardner in a mathematical order, and with much ingenuity ; but to those who have time and leisure, the works of the latter will afford greater satisfaction.

pushes his inquiries beyond the boundaries of nature, and the limits assigned by the word of God. He becomes fond of paradoxes, which are endless, and curious disputes which he does not understand, and indeed cannot fully unfold. What is salutary and beneficial, to a certain extent, becomes injurious and fatal, when carried into the regions of fancy, and beyond those boundaries or limits to which the human intellect is justly prescribed. He will sometimes admire things which are inconsistent, and with all his skill in logical argument, admit as truth that which is repugnant and absurd (8). The study of mathematics ought, if possible, to be mingled with other pursuits, and with the different branches of useful knowledge, by which this unhappy tendency is greatly corrected. The mind, continually employed upon these abstract pursuits, imbibes strong prejudices, which are not easy to be eradicated; and it loses that improvement or elastic force, which it might

(9) What Hume said of Bishop Berkely, may be said of many of the speculations of mathematicians, and particularly of astronomers; and I think, may fairly express the result of Dr. Chalmers' labours in these Discourses on Astronomy. "All his arguments, though otherwise intended, are in reality merely sceptical; which appears from this—that they *admit of no answer, and produce no conviction*. Their only effect is to cause that momentary amazement and irresolution and confusion, which is the result of scepticism."

Hume's Essays, vol. 2, p. 484, ed. 1777.

have received from other sources (10). It must, I think, be granted, that tedious calculations in

(10) " But a penetration into the abstruse difficulties and depth of modern algebra and fluxions, the various methods of quadratures, the mensuration of all manner of curves and their mutual transformation, and twenty other things that some modern mathematicians deal in, are not worth the labour of those who design either of the three learned professions, divinity, law, or physic, as the business of life. This is the sentence of a considerable man, Dr. George Cheyne, who was a very good proficient and writer on these subjects. He affirms, that they are but barren and airy studies for a man entirely to live upon, and that for a man to indulge and riot in these exquisitely bewitching contemplations, is only proper for public professors, or for gentlemen of estates, who have a strong propensity this way, and a genius fit to cultivate them. But, says he, to own a great and grievous truth, though they may quicken and sharpen the invention, strengthen and extend the imagination, improve and refine the reasoning faculty, and are of use both in the necessary and luxurious refinement of mechanical arts; yet, having no tendency to rectify the will, to sweeten the temper, or mend the heart, they often leave a stiffness, a positiveness and sufficiency on weak minds, which is much more pernicious to society, and to the interests of the great end of our being, than all their advantages can recompence. He adds further, concerning the launching into the depths of the studies, that they are apt to beget a secret and refined pride, an overweening and overbearing vanity, the most opposite temper to the true spirit of the gospel. This tempts them to presume on a kind of omnipotence in respect to their fellow creatures who have not risen to their elevation: nor are they fit to be trusted in the hands of any but those who

algebra, and more especially in the visionary science of fluxions, are not the best means to be employed for the improvement of the mind. The constant exercise of the mind in these pursuits, is often attended with a debasing and stupefying effect in their influence upon the higher and nobler faculties of the soul, especially upon the feelings and the affections of the heart ; producing a narrowness and bigotry, sometimes conspicuous among those who pass for able and skilful mathematicians (11). Some of them appear to be almost incapacitated by their pursuits for the investigation of moral truths, or for inquiries purely theological. Every thing is measured by the standard of truth which they have

have acquired a humble heart, a lowly spirit, and a sober and teachable temper."

Watts's Improvement of the Mind, chap. 20.

Vide Dr. Cheyne's Preface to his *Essay on Health and long Life*.

(11) Bp. Watson confesses the fact : " The fact is, that I was early in life accustomed to mathematical discussion, and the certainty attending it ; and not meeting with that certainty in the science of metaphysics, of natural or revealed religion, I have an habitual tendency to an hesitation of judgment, rather than to a peremptory decision on many points.—But I pray God to pardon this my wavering in less essential points, since it proceeds not from any immoral propensity, and is attended by a firm belief of a resurrection and a future state of retribution, as described in the gospels."

Anecdotes of the Life of Bp. Watson, vol. 2, p. 353.

erected ; and with them nothing is certain, but the science which they study, and the hypothesis which they please to espouse. Whatever goes to establish the credibility of a divine revelation, is of all other things the most obnoxious to their feelings. To the Bible, as the source of divine knowledge, the mere mathematician generally revolts. His heart is indisposed to the subject ; and until that is renovated, no reasoning will be altogether logical, no arguments completely forcible, and no evidence sufficiently strong. The power of reasoning is employed on that side which pleases, and which adapts itself to his individual taste ; the same power exerted in a right direction, is sufficiently strong to remove every objection, and to overcome every doubt. Call up the exercise of the same power in favour of Christianity, and every cloud vanishes, every obstacle is removed, and the beams of a divine light will shine brighter and clearer, until they irradiate every faculty of the mind, and warm and animate every passion of the soul. It gives me pleasure to quote Dr. Chalmers on this subject (12).

(12) “ Has he that sagacity and comprehension of talent, by which he can seize on the leading principles, which run through the writings of some eminent philosopher ? This very exercise may be gone through on the writings of inspiration ; and the man, who with the works of Aristotle before him, can present the world with the best system or summary

If such should be the baneful effects of the study of pure mathematics, upon the heart and the affections, what an impression may be expected from the new discoveries in the science

of his principles, might transfer these very powers to the works of the Apostles and Evangelists, and present the world with a just and interesting survey of the doctrines of our faith." *Dr. Chalmers' Sermons*, p. 22. 1819.

Only conceive for a moment the force of such a mind as David Hume's, had it been employed on the side of religion. The evidences of Christianity, under the influence of his pen, might have appeared with a force altogether new and irresistible. If he could advocate a bad cause with so much skill and ingenuity, what must have been the effect of his reasoning on the side of revelation ! But such was not the design of Providence. His talents were employed in the cause of Infidelity, as an exciting principle, to call up the labours of others, which in the end should prove far more extensively useful, and more generally beneficial to the church and the world.

If the mathematicians of the north are not a very different class of beings from those in the south, I suppose Dr. Chalmers must have seen many instances of mathematical infidelity. Conversing upon this subject a few years since, with an eminent minister of Edinburgh, who has produced some very important literary works, and who is well acquainted with the state of religion and learning in Scotland ; he assured me, that " mathematical and metaphysical studies in Scotland, had led the greater part of the clergy in the established church, to adopt infidel principles. Many of them profess the christian religion in appearance, who are privately opposed to it." If this be true, and I am greatly afraid it is, what is to be expected from the laity?

of astronomy ! Let it never be forgotten, that these discoveries are hypothetical, and that they are founded upon optical illusion, originating in the fancy, and supported by the imagination. You will not elicit them, by applying the rules of the Baconian philosophy ; or by looking through a telescope, aided by the science of geometry ; but they are invented in the closet, brought to the telescope, and then ushered into the world as the close result of inductive investigation. Where are the men who dare to examine, and inquire, and think for themselves ? Not among the students of astronomy, for they are all led, like the sheep, by the sound of the bell (13). It is acknowledged by the most san-

(13) " Few among mankind are able, and perhaps fewer are willing, to take the trouble of preserving with consistency a system of principles purely of their own selection. They separate themselves into large divisions, which, like the flock conducted by the sheep and bell, implicitly tread in the footsteps of some distinguished leader. Thus is the pain of consulting the judgment in every emergency easily avoided. The road becomes a beaten and a wide one, and each individual knows where to stop, only by seeing the vestige of his predecessor." *Knox's Essays, chap. 5.*

In Mr. Henry Redhead Yorke's " Letters from France, 2 vols. 1806," the substance of a conversation is given with Mr. Paine at a dinner party. Good manners was observed until a lady introduced the topic of religion, who speaking in favor of revelation, he immediately burst out with vehemence, and said, that " the knowledge which a school boy possess-

guine admirers of these eminent astronomers, that they fall into such conjectures as are not to be expected from the decrepitude of old age, or the anxious solitudes of early youth, and which fully evince their weakness and folly. It is acknowledged, nay who can deny it?—that they are generally devoted to the cause of infidelity. In this science, it is the few only who govern the many. What then can be expected, if those few individuals should exercise all their talents, in the success of a cause for which they feel so deeply interested? The very desire to promote it pushes them forward to fresh discoveries, to novel opinions, and to increased exertions : and every treatise they publish, with a very few exceptions, proves the latent desire ever lurking in the breast—a desire to overturn, if possible, the truth and authority of divine revelation (14).

ed of the Newtonian philosophy was sufficient to convict Moses of a falsehood ;" proving what we have before asserted, that Paine's infidelity arose from his mathematical knowledge. I quote the remark from memory ; but I know it is substantially correct.

(14) Dr. Hutton imagines the world to be eternal, and endowed with a renovating power ; for he says, " When the former land of this globe had been complete, so as to begin to waste and be impaired by the encroachments of the sea, the present land began to appear above the surface of the ocean. In this manner we suppose a due proportion of land and water to be always preserved upon the surface of the

The modern astronomer, in his midnight rambles, loses sight of the grandeur, and infinitely varied beauty and scenery of the earth. His eyes are busily employed upon objects, far beyond the proper boundary of human vision. Occupied about the heavens, he forgets the earth. Novelty has charms to attract our attention. The curiosity inherent in the human mind is ever at work to penetrate the veil, which conceals from our view the invisible world. Under this impression the astronomer proceeds; he ventures abroad into unknown regions, and expatiates on those tracks, which are far beyond the limits of a sober and rational investigation (15). His imagination takes fire; a few

globe, for the purpose of a habitable world such as we possess." After endeavouring to prove a succession of worlds in the system of nature, he concludes his dissertation in these words: "the result, therefore, of our present inquiry is, that we find no vestige of a beginning, no prospect of an end." Such are the sentiments inculcated upon the minds of British Youth, in a very useful, and in other respects a valuable work—Keith's *Use of the Globes*, p. 104. 1808.

(15) "You seem fond of displaying your skill in philosophy and science; you speak more than once of Euclid; and in censuring St. Paul, you intimate to us, that when the Apostle says—One star differeth from another in glory—he ought to have said—in distance. All men see that one star differeth from another star in glory, or brightness, but few men know that their difference in brightness arises from their difference in distance; and I beg leave to say, that

vivid sparks are struck off, and these dazzle and confound the spectators. With these ebullitions, and phantoms of the imagination, Dr. Chalmers appears to be very familiar. This gentleman is undoubtedly possessed of a strong and vigorous imagination ; but, “ like one of the peat fires in his own country, of more smoke than fire, and of much more fire than heat ; and the matter of the fire, moreover, is of such complete earth and rubbish, that the greatest wonder is, how any one could think of kindling such materials.” He appears enveloped in all the armoury of gunpowder, tropes, and figures ; and after all this mighty bustle, a great explosion is made, and nothing remains but dust and smoke, confusion and darkness. If you read these Discourses attentively, and let your understanding consider and sit in judgment upon the principles which they contain, the reasoning employed, and the deductions elicited, very little, I am persuaded, will be added to your stock of knowledge. All

even you, philosopher as you are, do not know it. You make an assumption which you cannot prove—that the stars are *equal* in magnitude, and placed at *different* distances from the earth ; but you cannot prove that they are not *different* in magnitude, and placed at equal distances, though none of them may be so near to the earth as to have any sensible annual *parallax*.”

Watson's Apology for the Bible, p. 324. 1799.

that is argumentative and useful, might have been compressed into a very small compass; and what is new and original, may be enclosed in a nutshell. The immensity, to which Dr. Chalmers so frequently alludes, is the darling theme of the infidel astronomer. Upon this ideal infinity, all his imaginary powers are employed. It is the idol which he erects as a substitute for Jehovah, the Lord God Omnipotent;—and what are the attributes of this false deity, the object of adoration, and the constant delight of the modern philosopher?—Of him they know nothing, and therefore can produce nothing. All is chance, destiny, uncertainty. Upon these they rest their hopes for the future. Doubt, consternation, and fear, are the principles implanted in their breasts; and these are the substitutes which they impose upon the world, for the christian's hope, confidence, peace, and holy joy.

I am, Dear Sir,

Yours, &c.

LETTER IX.

ON THE PLURALITY OF WORLDS.

To these meditations, humanity is unequal. But yet, we may ask, not of our Maker, but of each other, since on the one side of the creation, wherever it stops, it must stop infinitely below infinity, and on the other infinitely above nothing, what necessity there is that it should proceed so far either way, that beings so high or so low should ever have existed. We may ask, but I believe no created wisdom can give an adequate answer. DR. JOHNSON.

We should be between the moon and the earth ; this would be the true place for seeing well : we ought in such cases to be simply spectators of the world, and not inhabitants.

FONTENELLE.

DEAR SIR,

The progress of modern astronomy, and the conjectures which it proposes, must necessarily direct the attention of inquisitive minds to the subject matter of this letter. The Christian is anxious satisfactorily to account for the imaginary worlds, now said to float in the immensity by which he is surrounded. Inquiries naturally press upon the mind, the solution of which is listened to with some anxiety. What

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are those bodies which roll on the confines of the visible system? If they are acknowledged to be worlds like the one we inhabit, how can we reconcile the fact with the silence of the scriptures? Or do the scriptures sanction the opinion? If they do, what aspect have these conjectures upon the grand scheme of the christian revelation?

To inquiries like these, numerous answers have already been given, some of them ingenious and amusing, others of them trifling, and all of them speculative and uncertain. The authors who adopt the opinion, of what is called the immensity of creation, are compelled to seek refuge in speculations rather novel and romantic; and suppositions are thus framed without any regard to the authority of the scripture (1). I

(1) That the scripture is not altogether silent upon this subject, Heb. i, 2, and xi, 3, may be introduced. But Parkhurst, by the word *Αἰῶνας*, understands, and I cannot but think, rightly, "all the various revolutions and grand occurrences which have happened to this created system;" and in this opinion he is sanctioned by the Syriac version, a sufficient and most respectable authority.

A *pseudo critic*, in one of our theological reviews, who possesses some acuteness, but whose praise or censure is matter of little moment, was considerably mortified at the first appearance of this work, and determined, if possible, to crush it. After exhausting some low raillery, and a little vulgar declamation, of which he possesses a fund, the only argument he

know perfectly well the endeavours which have been made, by the aid of criticism, to render

could fairly attack, was this criticism of Mr. Parkhurst. To his authority, he opposes the venerated Dr. Macknight. I acknowledge the respectability of the reference, but I deem it insufficient. Dr. Macknight, I apprehend, borrowed it from Peirce,* and Peirce derived it from the *Modern Astronomy*. Leaving, however, this conjecture, the whole train of ancient critics are on the side of Mr. Parkhurst; not merely Socinian writers, as he would insinuate, but the most sound and orthodox critics. Not to waste the reader's time and patience in a fruitless controversy with such a writer, I beg leave to quote an authority of sufficient strength, to justify this said criticism of Mr. Parkhurst. "Per αἰῶνας intelligit, durationem omnem creatam, longas et continuas temporum revolutiones, temporaria et temporaria omnia; quicquid in seculis usquam, unquam, exstat aut exstabit. Meton. et Enall. numeri: mundum, et quicquid in eo continetur, ut vox sumitur. *Matth.* 28, 20, et *Heb.* 11, 3. Sic et Hebræi עולמים, quod valet αἰῶνας, pro mundo ponunt per Meton. Hinc Deus עולמים: sic כולי עלמא Chaldeis, totus mundus. Mundum autem sic vocat; quod per αἰῶνας, id est, *temporum revolutiones*, durat. Αἰῶνας, dicit num. plur. vel 1, per Enallagen: vel 2, respiciens multa secula quibus durat mundus. vel 3, accommodans se

* "Through faith we understand, that the worlds were framed by the word of God. There can be no room to doubt, but that the *worlds*, αἰῶνας, here mentioned, are the *material* worlds, the heavens, and the earth; since the Apostle afterward in the same verse calls them, *the things that are seen*: by which expression he undoubtedly means the sun, moon, stars, earth, men, and other visible works of God."

Vide Peirce's Paraphrase, and Hallett's Supplement.

these discoveries more interesting and satisfactory to the christian philosopher. But I consider every departure from the plain and obvious meaning of revelation, a departure from the only source of light and intelligence. I shall attempt a few remarks upon some of these conjectures, which are immediately connected with these celebrated Discourses.

I must confess, that I was rather surprised that Dr. Chalmers did not condescend to notice some of the writers, to whom I think he must be a little indebted. I cannot suppose his reading to be so confined, as not to have seen them. Dr. Beattie, his countryman, felt the force of the objection against the scheme of human redemption, arising from these modern speculations, and endeavours to obviate it, by supposing, that our fall and recovery may be of use and importance to the other orders of creation (2.) To this

recepta Judæorum sententiæ et modo loquendi. Judæi mundum et quoad subsistentiam et quoad durationem, varie distinguunt. Tres mundi sunt *humilis*, nempe terra; *medius*, sphærarum et stellarum; et *supremum*, domicilium Dei et Angelorum. Deinde, *Mundus*, inquit, est quintuplex: 1, *Antiquus*, antediluvianus; 2, *Præsens*, sive status rerum sub Ecclesia Judaica; 3, *Adventus Messie*, qui *venturus*, Heb. 2, 5. 4, *Mundus Resurrectionis*; 5, *Mundus protractus*, sive vita æterna." *Poli Synopsis*.

(2) Dr. Beattie says, in his Evidences of the Christian Religion, "It is not absurd to imagine, that our fall and recovery may be useful to them as an example, and that the di-

opinion, there is some sanction in the holy scriptures ; but very little, however, to satisfy needless or presumptuous curiosity. Many learned men have pursued the study of this subject ; and every difficulty is now supposed to be removed, by an application of a mediatorial scheme to other systems and other worlds. Bishop Porteus sanctions this opinion ; but it is easy to see that the conjecture is formed in consequence of discoveries, real or imaginary ; and the reasoning he employs is entirely analogical (3). Some of the

vine grace manifested in our redemption, may raise their admiration and gratitude into brighter raptures, and quicken their ardour to inquire, with even new delight, into the dispensations of infinite wisdom. This is not mere conjecture ; it derives plausibility from many analogies in nature, as well as from holy writ, which represents the mystery of our redemption as an object of curiosity to superior beings, and our repentance as an occasion of their joy. Every new discovery in the visible universe, ought to give elevation and a new impulse to the pious affections. And the further we see that the works of God extend, the more let us be overwhelmed with devout astonishment in the contemplation of his *infinite, eternal, and universal BEING.*"

(3) " It is, I believe, generally taken for granted, that it was for the human race alone that Christ suffered and died ; and we are then asked with an air of triumph, whether it be conceivable, or in any degree credible, that the Eternal Son of God should submit to so much indignity and so much misery, for the fallen, the wicked, the wretched inhabitants of this small globe of earth, which is as a grain of sand to a mountain, a mere speck in the universe, when compared with

most ingenious speculations of this kind were

that immensity of worlds, and systems of worlds, which the sagacity of a great modern astronomer* has discovered in the boundless regions of space. But on what grounds is it concluded that the benefits of Christ's death extend no farther than to ourselves? As well might we suppose that the sun was placed in the firmament merely to illuminate and to warm this earth that we inhabit. To the vulgar and the illiterate, this actually appears to be the case: but philosophy teaches us better things. It enlarges our contracted views of divine beneficence, and brings us acquainted with other planets and other worlds, which share with us the cheering influence and vivifying warmth of that glorious luminary. Is it not a fair analogy then to conclude, that the great *Spiritual Light of the World*, the fountain of life, and health, and joy to the soul, does not scatter his blessings over the creation with a more sparing hand, and that the Sun of Righteousness rises with healing in his wings to other orders of beings besides ourselves? Nor does this conclusion rest on analogy alone. It is evident from Scripture itself, that we are by no means the only creatures in the universe interested in the sacrifice of our Redeemer. (See Ephesians i, 10. Colossians i, 16—20.) From intimations such as these, it is highly probable, that in the great work of Redemption, as well as of Creation, there is a vast stupendous plan of wisdom, of which we cannot at present so much as conceive the whole compass and extent. And if we could improve and assist the mental, as we can the corporeal sight; if we could magnify and bring nearer to us, by the help of instruments, the great component parts of the spiritual, as we do the vast bodies of the natural world; there can be no doubt, that the

* Dr. Herschel—now Sir William Herschel.

introduced by Mr. Andrew Fuller (4), in his answer to Paine, and which Dr. Chalmers, I sup-

resemblance and analogy would hold between them in this as it does in many other well known instances ; and that a scene of wonders would burst in upon us from the one, at least equal, if not superior to those, which the united powers of astronomy and of optics disclose to us in the other. If this train of reasoning be just, (and who is there that will undertake to say, much more to prove, that it is not so ?) if the redemption wrought by Christ extended to other worlds, perhaps many others besides our own ; if its virtues penetrate even into heaven itself ; if it gather together *all things* in Christ ; who will then say, that the dignity of the agent was disproportioned to the magnitude of the work ; and that it was not a scene sufficiently splendid for the Son of God himself to appear upon, and to display the riches of his love, not only to the race of man, but to many other orders of intelligent beings ?" *Porteus' Works*, vol. 3, p. 70.

(4) Mr. Andrew Fuller, in his work "The Gospel its own Witness," has some very ingenious remarks upon this subject, which I cannot omit. "Let creation be as extensive as it may, and the number of worlds be multiplied to the utmost boundary to which imagination can reach, there is no proof that any of them, except men and angels, have apostatized from God. If our world be only a small province, so to speak, of God's vast empire, there is reason to hope that it is the only part of it where sin has entered, except among the fallen angels ; and that the endless myriads of intelligent beings in other worlds are all the hearty friends of virtue, of order, and of God. There is nothing inconsistent with reason in supposing that some one particular part of it should be chosen out of the rest, as a theatre on which the great author of all things would perform his most glorious works.

pose, must have read, for he treads closely in the same steps. To these authors we may add Mr.

Every empire that has been founded in this world, has had some one particular spot where those actions were performed from whence its glory has arisen. The glory of the Cæsars was founded on the event of a battle fought near a very inconsiderable city : and why not this world, though less than " twenty-five thousand miles in circumference," be chosen as the theatre on which God would bring about events that should fill his whole empire with glory and joy ? It would be as reasonable to plead the insignificance of Actium, or Agincourt, as an objection to the competency of the victories there obtained, (supposing them to have been on the side of righteousness,) to fill the respective empires of Rome and Britain with glory, as that of our world, to fill the whole empire of God with matter of joy and everlasting praise. The truth is, the comparative dimension of our world is of no account. If it be large enough for the accomplishment of events which are sufficient to occupy the minds of all intelligences, that is all that is required."

Gospel its own Witness, p. 211.

Mr. Fuller, I apprehend, had but little knowledge of science ; but he had a large and capacious mind. The above note is a sufficient proof of his striking originality of thought. Few such men appear in a century.

" And, just as we often read of the eyes of all Europe being turned to one spot, where some affair of eventful importance is going on, there might be the eyes of a whole universe turned to the one world where rebellion against the majesty of heaven had planted its standard ; and for the re-admission of which within the circle of his fellowship, God, whose justice was inflexible, but whose mercy higher, by some plan of mysterious wisdom, made to rejoice over it, was

Edward King, and Dr. Edward Nares, whose opinions nearly coincide. The supposed disco-

putting forth all the might, and travailing in all the greatness of the attributes which belonged to him."

Discourses, p. 137.

"The extent of the field upon which this question was decided, has no more influence on the question itself, than the figure or the dimensions of that field of combat on which some great political question was fought, has on the importance or on the moral principles of the contróversy that gave rise to it. This objection about the narrowness of the theatre, carries along with it the grossness of materialism. To the eye of spiritual and intelligent beings, it is nothing. In this view, the redemption of a sinful world derives its chief interest from the display it gives of the mind and purposes of the Deity : and, should that world be but a single speck in the immensity of the works of God, the only way in which this affects their estimate of him, is to magnify his loving kindness ; who, rather than lose one solitary world, of the myriads he has formed, would lavish all the riches of his beneficence and of his wisdom on the recovery of its guilty population."

Discourses, p. 144.

The same idea is repeatedly amplified by Dr. Chalmers, and given under various forms and imagery, which appears to be the peculiar habit of his style.

It is true, we know, that "creation has its districts and its provinces, and we read of thrones and dominions and principalities and powers ;"—but in what part of the book is it said, that these celestial orders are among the planetary regions, or that they inhabit the stars ? What avails all this fine declamation ?—You cannot proceed a step in the pursuit, without the light of revelation—and that is wholly silent upon the subject. According to Swedenborg, heaven is not a place,

veries of Dr. Herschel seem to have laid the foundation of much ingenious criticism and disquisition. Even the different colours of the stars are pregnant with new mysteries, under which are concealed important information (5).

but a state ; locality, as applied to it, is considered by his admirers to involve injurious consequences. Heaven and Hell regard the interior of man ; and we may be in that state now as much as we ever shall be. When we die, we change our residence, but probably for one of the planets ; at least, so it is supposed by some. Dr. Chalmers, perhaps, may think so too. But what saith the scripture—*Eye hath not seen, nor ear heard, nor hath it entered into the heart of man to conceive*. In fact, it is a state altogether different from this scene of matter ; we must be unclothed to discover it—for *flesh and blood cannot enter into the kingdom of God*.

(5) “ Dr. Herschel has observed, that the stars, when accurately examined by the highest magnifiers we have yet been able to procure, are of different colours. Some blueish, some reddish ; of very different shades ; some pink ; some white, and dusky of different shades.” The inferences drawn are as follows. “ And now, from the preceding circumstances put together, we may surely venture to conclude, that as in the most glorious of all the visions that have been vouchsafed to mankind, the objects have appeared with such resplendent colours of *emitted light* ; and as from philosophical principles, we have reason to be persuaded, that the exterior surface of the sun must abound with objects, emitting all the beautiful colours of which sun-beams at least are composed ; so it must follow, that the sun itself is really a most glorious habitation ; adorned with exquisite beauty, in the most brilliant manner, and one of the heavens. The various bodies

Mr. King is a great admirer of Dr. Herschel's speculations; he supposes the philosophical passages in the old testament to be written prospectively, with respect to modern and future discoveries, and particularly of the doctrine of the plurality of worlds (6). He confounds two

which abide on its surface, and with which it is adorned, shining there in the most vivid manner, with those different sorts of beautiful colours, at their very first emission, which are afterwards produced on the earth, where a ray of the sun's light is subdivided into its primæval colours by a prism." *Morsels of Criticism*, vol. 1, p. 74.

To this power of philosophical divination, through the medium of different colours, Dr. Chalmers also bears his testimony. "We can see of one, that its surface rises into inequalities; that it swells into mountains, and stretches into vallies: of another, that it is surrounded by an atmosphere which may support the respiration of animals: of a third, that clouds are formed and suspended over it, which may minister to it all the bloom and luxuriance of vegetation: and of a fourth, that a *white colour* spreads over its northern regions as its winter advances, and that on the approach of summer this whiteness is dissipated; giving room to suppose, that the element of water abounds in it, that it rises by evaporation into its atmosphere, that it freezes upon the application of cold, that it is precipitated in the form of snow, that it covers the ground with a fleecy mantle, which melts away from the heat of a more vertical sun; and that other worlds bear a resemblance to our own, in the same yearly round of beneficent and interesting changes.

Discourses, p. 31.

(6) It is very extraordinary, that this writer should wholly disregard the Hebrew text, and derive all his conjectures

things, which ought to be kept clear and distinct ; the material heavens which we see, with the invisible heavens, which we do not see. According to these discoveries, instead of the soul, after death, being introduced to a spiritual state of existence, it is to be conveyed to one of the stars ; which star, being like the earth we inhabit, our souls must consequently be again clothed with some new vehicle, and the enjoyments of heaven be similar to the enjoyments on earth. To these sentiments of Mr. King, Dr. Nares pays considerable deference ; and the consonance (7) between them, in many particulars,

from the septuagint version. Surely there is some perversion, or prejudice, in the understanding, or judgment, in preferring the stream to the fountain, which cannot be accounted for upon any rational principles. For a true estimate of the importance and real value of the septuagint, I refer to Letters on the Septuagint, by Robert Spearman, Esq. The book is anonymous, 1755.

(7) I observe that Dr. Nares, in common with Mr. King, takes it for granted, that the notions generally adopted about the plurality of worlds, are perfectly correct. The critical powers are thus employed, upon the words שמים—תבל—Οικουμένη—Ουρανός—Κοσμος—Mundus, Orbis, &c. and these words are made to refer to a universe of worlds—by what train of evidence, I must refer you to the work itself. Etymology is considered often as very uncertain evidence ; but if it is to be collected in support of any favourite notions, it is easily admitted. These words admit of a great latitude

is very evident. He cannot limit the mediatorial scheme to this our system, much less to the

of interpretation : but if it should be found that our globe is the only part inhabited by intelligent beings in the material creation, and if this opinion is the uniform sentiment of the sacred writings ; all this laboured criticism can be of no avail. Upon the word שמים, I beg leave to say, that in rejecting the interpretation of Mr. Hutchinson, I conceive this respectable writer has given up the most natural meaning of the word, and substituted only vague and uncertain definitions. There is a peculiarity in the language of Moses, which appears to me to overturn the criticisms of Dr. Nares and of Mr. King, upon the word Heaven—ויקרא אלהים לרקיע שמים—And God called the expansion, heavens. It is applied to a substance which has elasticity, or more properly, expansive force.

Dr. Geddes, who did not possess that nice discrimination that could be wished, I mean with respect to the authority of the sacred writings, observes, that the “ word heaven has in scripture three different acceptations : 1, It signifies the air around us, where the birds fly, and where the clouds are gathered ; 2, The whole of the visible sky, including the sun, moon, and stars ; 3, The invisible supposed residence of the Divinity, in the heaven of heavens.”

I do not wish to advocate all the sentiments of Mr. Hutchinson ; but I must say, that great injustice is done to him, by many little dabblers in philosophy and divinity, who often pour contempt upon what they are unable, or at least unwilling, to comprehend. His criticisms, especially upon those words which are applied by him to the physical parts of the mundane system, are often much deprecated. The worthy and Rev. Dr. Nares unites his voice in the general clamour : but let him review the etymological evidence, in support of

inhabitants of the earth. He enters fully into the said discoveries of Dr. Herschel, and receives them with little limitation. By this ingenious author the words of St. Paul, *for he hath put all things under his feet*, signify, “not only this pitiful globe of ours, but all the plurality of worlds, and variety of beings that infinite space can contain.” He considers the mediation of Christ to have several mysteries, or unknown aspects, a sort of universal mediation and redemption for beings in general, who form one general universe. But the subject is treated with much ability, considerable learning, and with that modesty, which proves a mind well acquainted with the difficulties in which it is involved; and the whole is illustrated by quotations and interesting passages from writers of

his own system, and compare it with the same kind of evidence in Mr. Parkhurst's Hebrew Lexicon, as borrowed from Mr. Hutchinson, and I cannot but think the latter far outweighs the former. I know the force of prejudice, especially if the sentiment is unfashionable. But let a candid examination be made of those words, by the only proper standard of evidence, by running the eye down the roots in the Hebrew Concordance. Observe the nice selection of illustration which he often adopted; and above all, the preservation of the radical idea, through every passage of the Bible. While not indifferent to the authority of the lexicographers, he has made the Hebrew explain the Hebrew, and Scripture the best interpreter of Scripture.

various opinions (8). It is easy to see that Dr. Nares brought his discoveries to the Bible, and then endeavours, like many others, by etymology and critical sagacity, to educe light from sources hitherto concealed in obscurity. Thus the Bible

(8) Indeed it is acknowledged by Dr. Nares, that he did not find the sentiment in the Scriptures ; but having adopted the opinion, he endeavoured to find a sanction for it. " When I first turned to the Scriptures, I had it not so much in view, to seek for the general notion of a plurality of worlds, as, supposing this notion to be just, to examine whether the MEDIATORIAL DISPENSATION could be, in any manner, and with any propriety, so extended by analogy, as to be brought to correspond with such enlarged notions of the visible creation." P. 172.

" And, though in the first pages of this work, I have declared that I originally entered into these researches, for the express purpose of enabling myself to combat certain objections raised against the Scriptures, on this particular ground ; yet I should desire nothing more (if the objectors themselves would agree to it,) than to leave the question exactly where it was ; that is, as much incapable of being fully resolved from Scripture, as any other question merely philosophical."

P. 170.

" I hope I shall not appear to have made it a question of theology unguardedly ; for no man can be more persuaded than myself, that it must, in fact, for ever remain a question of philosophical speculation and conjecture ; revelation not having spoken out upon the subject, any more than upon many other points of great physical importance ; revelation itself being now also closed, and our natural faculties wholly incompetent to the discovery and demonstration of the truth."

P. 75.

is made to speak all opinions, whether philosophical or religious. The road to truth lies open before us, but the path is so *straight and narrow*, that few there be that find it. Philosophy must submit to the authority of divine revelation ; until the mind is willing to make this book the standard of truth, and the fountain of knowledge, it will find no rest amidst the wanderings of the imagination, the ebullitions of vanity, and the fluctuations of sentiment.

It may not be unworthy your notice, that these opinions approximate very near to those of Emanuel Swedenborg, by removing the doctrine of the atonement, and giving a new meaning to the death and sacrifice of Christ, very different to the plain and unsophisticated language of the holy scriptures (9). When you attempt to make

(9) The atonement made for man, we are told by Dr. Nares, may be for *the creation generally*. So says Swedenborg. Redemption is the "restoration of the worlds to order." Dr. Chalmers drops into the same notion. "It is not merely asserted, what in our last discourse has been already done, that, for any thing we can know by reason, the plan of redemption may have its influences and its bearings on those creatures of God, who people other regions and occupy other fields in the immensity of his dominions ; that to argue, therefore, on this plan being instituted for the single benefit of the world we live in, and of the species to which we belong, is a mere presumption of the infidel himself ; and that the objection he rears on it must fall to the ground, when the vanity of the presumption is exposed."

Discourses, p. 123.

these sentiments coalesce with the grand touchstone of knowledge and sacred truth, a discrepancy becomes visible. It is like applying *a new*

Something like this was the opinion of Whiston, as quoted by Dr. Nares. "How do we know but that, through our peculiar infirmities, sin may have made the greatest havoc here; and that we, of all the members of Christ's spiritual body, have been those that most eminently 'lacked.' On this account, perhaps, this globe was especially made the scene of Christ's triumph over Satan. Here, perhaps, on that very account, he paid the price of the whole world's redemption: 'not taking on him the nature of angels,' or any superior beings, but 'taking to him, in preference, the seed of Abraham.' In this, therefore, we have certainly received more abundant honour, of all the rational beings of the creation, that Christ should have condescended to take our particular nature upon him." *Dr. Nares, p. 268.*

"God became man, subjugated hell, restored order in heaven, and prepared a new spiritual church: these three things constitute redemption: the Lord in these days is still employed in a redemption which commenced with the last Judgment, in the year 1757; and this I can with truth affirm, the Lord having rendered me a witness of it. It is taught throughout Christendom, that God, offended with mankind, had damned them all; but that being merciful, he had engaged his Son to become man; that this son, by suffering every species of indignity, and at last death, has appeased the anger of his Father, and reconciled mankind to him; and that he is still a mediator between God and Man. All this is an imaginary tragedy; an error connate with that of three divine persons existing in God."—Such is the doctrine of Redemption as taught by Swedenborg.

Vide *Summaria Expositio Doct. novæ Ecclesiæ*, 60—69.

piece of cloth to an old garment ; for that which is put in to fill it up, taketh from the garment, and the rent is made worse. We ought never to forget, that what we think grand and sublime, may appear little and mean in the eyes of infinite wisdom. To pursue fanciful speculations, which have no foundation but in conjecture and hypothesis, must be absurd and ridiculous. Reasoning by analogy from such imaginary objects, when laid in the balance of truth, will be found *lighter than vanity*.

Dr. Chalmers now follows the above writers, with a more splendid and dazzling series of declamations, and gives a new colour and brilliancy to former arguments. He cannot, perhaps, be said to follow exactly the same course ; yet there is a similarity of sentiment, which proves some accordancy. He considers it as possible, nay, probable, that the effect of human redemption may be extended to other worlds, and that the Bible speaks decisively, as to the knowledge of its being disseminated among the higher orders of created intelligence. These conjectures are thrown out to overwhelm the conjectures of the infidel. While the speculative infidel attempts to “burst across the confines of this world’s habitation in space”—he makes a similar attempt “to burst across the confines of this world’s history of time, and out of the futurity which lies beyond it, gathers that which is to

blow the argument to pieces, or stamp upon it all the narrowness of a partial and mistaken calculation (10)." But the difficulty remains the same, and the argument is involved in its original obscurity. To what end or purpose does it apply? Who and what are these orders of celestial intelligences? Are they the angels who surround the throne of God? Do these angels inhabit the planetary regions? If not, this splendid piece of machinery is dissolved, and leaves nothing more than the speculations of heathen philosophers, and the atheists of [former times (11). Without the discoveries of the telescope, the plain unlettered christian has been taught, from the days of the apostle, *that these things the angels desire to look into, and that there is joy in heaven over one sinner that repenteth*; and what more real knowledge is now gained upon the subject by all

(10) Discourses, p. 158.

(11) "The reader may behold innumerable worlds born daily, and dying every day (in *Lucretius Carus* on the Nature of Things), and bless his own good fortune that he remains safe and unhurt in the midst of so many and so great ruins and devastations. Meanwhile, he cannot but smile to see some *infant sucking* worlds, and others grown feeble and tottered by age, now dying with hunger, now choaked with fat. For nothing is more certain, than that *Lucretius* always loses himself when he falls foul upon Providence."

Creech's Lucretius, vol. 1, p. 187.

this mighty amplification of the sentiment? To such useless speculations we may reply, in the words of Dr. Johnson to Soame Jenyns. "We may ask, but I believe no created wisdom can give an adequate answer (12).!"

The philosophical deist takes offence, that man should consider himself of any importance in the scale of creation, when compared with the imaginary worlds by which he is surrounded. His own system, though visionary and problematic, never excites a single doubt or a moment's hesitation. Every speculation is certainty. Every hypothesis is demonstration. Enough, I think, has been already said, to raise some doubts about these conjectures. But you will say, it is very unfashionable to question them,

(12) The admirers of Dr. Chalmers, who are delighted with the visionary system of a plurality of worlds, may find amusement in reading another work, written much upon the same principles, "Concerning the Earths in our Solar System, which are called Planets, by Baron Swedenborg." The points of coincidence are remarkable. In my opinion, the professors of christianity who adopt this philosophical theory, are in the direct road, if they knew it, of receiving all the visions of Swedenborg. The writer of the preface to the above work quotes Huygens and Fontenelle as authorities, and says, "the reader will rejoice to find the uncertainty of former conjectures in regard to the population of the planets superseded in the present relation, by the more substantial and experimental evidence of so respectable an authority as that of Baron Swedenborg." *Preface, p. 2.*

because these conjectures are almost universally received. Undoubtedly this must be the case in the very nature of things. Few persons are capable of examining the subject fairly and impartially for themselves. How few are astronomers! How few are practically acquainted with that branch of astronomy which relates to experiment! How few can take the angle of parallax, and the measure of a planet! Of those who can, how few perform the operation! Among those who are able to make the experiment, how few are able or willing to reason upon it! The subject necessarily lies in the hands of a few, and these few are mostly speculative deists. Some of these, you will say, profess christianity; but were these to hazard a doubt, they would lose all reputation for science, and not be admired and courted by the ignorant and giddy multitude. If you seek truth, you must be content sometimes to retire from the crowd, and to find her in the lonely shade. Had the opinion of the plurality of worlds been at all favourable to the discoveries of divine revelation, I am inclined to believe, it would have been expunged long ere this, from the system of modern astronomy. You are not to suppose, however, that no men of science and literary reputation have sanctioned the opposite sentiment. During the past century it met with considerable opposition from many persons of inquiry and diligent re-

search ; and some of these were of more than ordinary attainments. Among these I would mention Mr. Thomas Baker, as a man of universal knowledge and deep erudition (13). His reflections on religion and learning were more read and admired than almost any book of that age, and is now only superseded by works of inferior merit. Those persons who were followers of the celebrated Mr. Hutchinson, gave no countenance to the doctrine of a plurality of worlds ; and for

(13) “ These world-mongers are always objecting the improbability of God’s framing so many vast and glorious bodies, only for the sake of this earth, so inconsiderable a portion of the whole. Among the rest, *Hugenius*, who in one place makes this objection, in another part of his book, as if he had forgot himself, thinks it enough to say, that God raised this mighty frame of things, that he might delight himself thereby ; and were there no other reason, we ought to acquiesce in this. But they that argue thus, seem to measure things by their bulk, which is a false way of reasoning. There is more beauty and contrivance in the structure of a human body, than there is in the glorious body of the sun ; and more perfection in one rational immaterial soul, than in the whole mass of matter, be it never so bulky. There cannot then be any absurdity in saying, that all things were created for this inferior world, and the inhabitants thereof ; and they that have such mean thoughts of it, seem not to have considered who it was that died to redeem it. Let them measure the world by that standard, and they cannot undervalue it any longer, without some reproach to infinite wisdom.” *Baker’s Reflections on Learning*, p. 114.

a very obvious reason—because they adhered closely to the language of the scriptures (14).

(14) The following remarks, addressed to the Bishop of Clogher, may be considered as the sentiments of the disciples of Mr. Hutchinson. Some few among them, I believe, consider the planets as inhabited; but this is not generally the case. “ His Lordship has two other arguments on this head, which, as they are of a religious nature, ought by no means to be omitted. They are founded upon the supposition, that the universe is of prodigious extent and immensity. He imagines that the fixed stars and planets are inhabited: allowing these two modest postulata, we are told, ‘ the consideration of these things may be of great use, in abating our pride and exalting our notions of the great Creator of all things.’ I must own, I should never have thought of this argument to abate man’s pride, which has been the very means of fostering and exalting it, by giving room to the wildest genius to indulge his extravagant fancy in acting the god, and making, (out of his own little head) an *infinity of worlds*. And why our author should have recourse to this far-fetched argument for what he allows ‘ the little contemptible particles of dust which we daily tread under our feet,’ sufficiently evince, I know not. And if the supposition of an infinity or plurality of worlds may serve to enlarge our idea of the power of God, or ‘ exalt our notions of the great Creator of all things,’ it must be remembered, that it will proportionably tend in weak minds, to lessen the idea of his goodness and concern for man, and so introduce infidelity and atheism in the world. And I am sorry to say it, that several of our modern philosophers have been these weak men, and have argued against Christianity from this very circumstance. Whereas, contracting the universe to its real bounds, and supposing all to have been created for man, will raise in man (if he has any sense of

Among the disciples of Mr. Hutchinson, you will find men of science and eminent learning,

gratitude) the highest degree of acknowledgment and praise ; and yet ample room will be left for adoring the power, the omnipotence of God. And if we are to stretch beyond all reason and religion, the almighty power or greatness, on purpose to exalt our notions of it, I can stretch it, perhaps, far beyond what any modern philosophers ever imagined. All greatness, then, I would observe, is comparative : what is great to man may not be so in the sight of an angel ; and what is great to both these, is nothing in respect of God. And I conceive that God, if he so pleases, can create a world in every atom of matter, or form creatures so small, that every atom of matter may appear to them as large as the universe at present does to man. The ingenious reader, if he is conversant with Mr. Leuwenhock's microscopical experiments, (which prove, as it is said, ' that there are animals in this world so extremely minute, that a million of them might be supposed not to exceed the bigness of a grain of sand ;') or if he allows the Newtonian hypothesis, ' that all the matter in the known universe may be reduced into a globe of *one inch* only in diameter,*' will not be backward in granting the above supposition *possible* ; and as it enlarges the idea of God's magnificent power, he will readily believe it probable ; and then every atom in this world may be *justly supposed* to contain another world ; nay, for aught we know, (to carry *human* probabilities further) *this world* itself may be but as an atom to another *infinitely larger*, in which it is tossed about much in the same manner as a particle of dust is in this, though with as little surprise to our knowledge of its inhabitants, as the movement of an old cheese to the living world within it." *Catcott on the Creation*, p. 33.

* Pemberton's View of Newton's Philosophers.

which is candidly acknowledged by some of their opponents (15). But in all our inquiries, truth

To this note I wish to give the following ingenious query, of which I can gain no rational solution from the admirers of the Newtonian Philosophy.

“ If a small quantity of air in a bladder, when the pressure of the external air is taken off, expands itself, so as to burst the bladder; what hinders our atmosphere from expanding itself into the empty space above it? Sir Isaac tells us, that a cubical inch of air is, by expansion, sufficient to fill all the orbits between us and Saturn. The expansive quality of the air is proved, by the experiment of the bladder above. Our atmosphere is, as they say, forty-five, or fifty miles high, and above and beyond it is nothing but empty space, or fine ether void of all resistance, such as remains in the receiver, when they have made what they call a vacuum. Is not then our atmosphere exactly in the same condition and circumstances as the bladder in the exhausted receiver? What therefore hinders this vast sphere of air from expanding itself into, and filling their imaginary regions of space, which are void of all sensible resistance, so can give none to prevent it?”

Spearman's Inquiry after Philosophy and Theology, p. 110.

(15) “ He justly observes, that the Copernican system leads to the doctrine of a plurality of worlds; and this has been the occasion of so many reproaches being thrown on the Newtonians for entertaining such opinions, especially in our own country, by some of that class of learned men, distinguished on account of their agreement in many particulars with the celebrated Mr. Hutchinson—*Hutchinsonians*. So many men of profound learning and distinguished eminence; so many strenuous defenders of our holy religion, and examples in their lives of its purest principles, have been known

ought to be the leading aim of our pursuit, without respect either to name or party ; and if we are guided by the sacred volume, we may most assur-

to adopt, or at least been suspected of inclining towards the sentiments of the singular writer I have mentioned, that on this account, as well as because I by no means feel competent to enter into all the questions such a discussion would lead to, I should be strongly disposed to suppress my own objections to their system of philosophy ; but that it so immediately affects the subject of our present inquiries ; more particularly in respect to a work I should otherwise have consulted with continual delight and pleasure. I speak of the very learned Mr. Parkhurst's *Hebrew and English Lexicon*. That learned author seems to admit, without reserve, in many articles, the physical principles of the Hutchinsonians, as set forth at large in the writings of Hutchinson himself, Mr. Bates, Catcott, &c., and with as little reserve treats the Newtonians, who are inclined to believe in a plurality of worlds, as *visionaries*." *Dr. Nares, ibid. p. 84.*

To this note, I beg leave to add, that Mr. Parkhurst always spoke from a conviction of truth, in every sentiment he adopted. Of what is called Hutchinsonian sentiments, he was certainly a great admirer. They gave a peculiar impulse to his researches and inquiries, upon the different subjects connected with the two Lexicons which he published. His illustrations of the sacred writings will go far to convey these sentiments to the next generation. The Lexicons are read as much for the peculiar sentiments they contain, as for an improvement in the languages of which they treat. For my own part, I consider his Greek and Hebrew Lexicons as the best commentary on the Bible, and the perusal of them as calculated very much to fortify the mind against all the attacks of the Infidel philosophy of the present age. I do not

edly attain it (16). I humbly apprehend that the Bible alone is the criterion of what is true or false, either in philosophy or theology, and was given for this important purpose. Whatever opinions are indulged, which militate against its authority and excellence, must be dangerous in their nature and destructive in their consequences. If the Bible is the word of God, it must be in harmony with the works of creation, and the laws which now govern the natural world. There is no supposed discovery in modern science, which

wish to prognosticate, but I cannot help thinking differently from the reverend Doctor above quoted—that so far from sinking into oblivion, this system is increasing, must increase, and will continue to increase, so long as the writings of Horne, Jones, and Parkhurst, are read and admired.

(16) With respect to the writings of Mr. Hutchinson, I do not recommend that you should become an implicit follower of all his opinions. Some of them I think wild and extravagant, and others perhaps incomprehensible. His style is crabbed, thorny, and disagreeable; yet you may find many valuable materials in his works, which will be of great advantage to you in the prosecution of theological learning. What has been said of Bishop Horne, may be said of many others.—“That he owed the beginning of his extensive knowledge to him; for such a beginning as he made, placed him on a new spot of high ground; from which he took all his prospects of religion and learning, and saw that whole road lying before him which he afterwards pursued with so much pleasure to himself, and benefit to the world.”

Jones' new preface to the Life of Bishop Horne, p. 8.

can possibly overthrow the revelation of Him, who holds the universe in the hollow of his hand, whose purposes are certain, whose understanding is infinite, and whose ways are past finding out. *His counsel must stand, and he will do all his pleasure* (16).

I am, Dear Sir,

Yours, &c.

(16) "That the stars are at immense distances, we have from an authority, far greater than the calculations of astronomers. Behold the height of the stars, how high they are*. But more expressly of the heaven itself—The heaven for height is unsearchable †. Thus saith the Lord. If the heaven above can be measured, then will I cast off all the seed of Israel ‡. Nay, the infinite mercy of God to fallen man is compared to the height of heaven. As the heaven is high, (meaning according to the height of heaven) above the earth; so great is his mercy towards them that fear him §. Or, what is more, his almighty power and infinite perfections are pointed out by his similitude; Canst thou by searching find out God? Canst thou find out the Almighty unto perfection? It is as high as heaven—What canst thou do? Deeper than hell—what canst thou know? Will any modern philosopher presume to speak in sublimer terms of the height of heaven? If he does, or rather if he can, he must so far exceed the truth."

Catcott on the Creation, p. 16.

* Job. xxii, 12. † Prov. xxv. 3. ‡ Jerem. xxxi, 37.

§ Psalm ciii, 11. || Job. xi, 7.

LETTER X.

ON SCRIPTURE PHILOSOPHY.

For, though it was commonly reported, that I had bestowed too many words upon a cause which neither required nor deserved them, one of the wisest men of this age, who is an host of himself, wished I had said more ; it being a cause of which the world heard much, but knew little, and wanted to know more.*

JONES.

DEAR SIR,

You feel some doubts as to the validity of my assertion, that the Bible is the only standard of true philosophy. You admit that it contains the revealed will of God to man ; but the subjects on which it treats, you consider “as far more important and interesting,” and solely directed to things which are more “immediately connected with the great scheme of human redemption.” But you must admit, that the Bible

* Suspected by some to be Bishop Horsley.

has some reference to the works of creation, and that the allusions to nature are very frequent, exceedingly beautiful, and absolutely correct. Little sanction to this opinion can be expected from those who deny the plenary inspiration of the holy scripture, because it must be in direct opposition to the peculiar sentiments which they indulge, and all the associations which they have cherished from their earliest years. Such consider the Bible as a mere historical document. Yet it would seem, I think, incumbent upon those who express a regard for divine revelation, patiently to examine, and diligently to inquire into the force and evidence by which this opinion has been, and continues to be maintained. If you turn your attention to these inquiries, it may appear that there is much more evidence in favour of this opinion than can be produced against it (1).

(1) The arguments in favour of this philosophy are thus urged by Mr. Pike—and they are unanswerable. “1. To suppose the Divine Being to conform himself in his word to bare outward appearances, or to the false apprehensions of the vulgar, is such a supposition as we will not admit in any other case. The allusions and references of scripture to history, or geography, and the like, we maintain to be just, and exactly true; and look upon ourselves as bound to believe and maintain the history as well as the *theology* of revelation; and why then should we not for the same reason account ourselves obliged to maintain that there is no mistake or misre-

That the Bible was not designed to teach philosophy, is the hackneyed objection which has been repeatedly urged, and as often refuted. It is acknowledged that it does not teach us natu-

presentation in its descriptions of, and references to, natural things. 2. There are many philosophical passages that cannot be regularly explained, as conformed to outward appearance, or the opinions of men. Witness the Mosaic account of the creation and formation of all things. Can any one affirm that the first chapter of the Bible is built upon a false hypothesis, or accommodated to vulgar apprehensions? And if it be not true, either in appearance or in reality, I see not how it can be true in any respect. 3. If God had thought fit to have made a revelation only of divine truths, then, indeed, we need not have expected any philosophy in his word. But as he has in innumerable places spoken either expressly or allusively of philosophical matters, we have surely the highest reason to look for true philosophy in his word. Again—4. There is a necessary connection between the knowledge of natural and spiritual things; since scripture constantly, or at least very frequently, refers our thoughts to natural ideas, in order to illustrate spiritual truths. And for this reason it appears to be of some considerable importance, that the natural ideas referred to be strictly just and true, in order to be a proper foundation for a right conception and representation of divine matters. To conclude—5. We must not suppose the word of God to speak false in any case whatsoever. Its history, its chronology, and its philosophy, must be in fact as true as its theology. If we suppose any part of the divine word to be erroneous, this so far shakes the authority of all the rest. And as God knows all things perfectly, we must believe him the fittest to give us an account of his *works*, as well as of his *nature*." *Pike's Philosophia Sacra*, p. 136.

ral philosophy in a systematic form, neither does it teach divinity systematically ; yet the state of the world and its present economy may be clearly and accurately traced (2). The necessity for this discovery will appear to be intimately blended with the interests of religion ;—highly necessary in past ages, and equally important in the present. It was necessary that the Hebrews, to whom pertained *the glory and the covenants*, should possess a correct history of the formation and constitution of the world, to guard them against the profane doctrines and idolatrous customs of the heathen nations, “who conspired universally to deify nature ; to confound the Creator with his works ; and to give to the world that adoration which is due only to the Maker of it (3).” It therefore asserts and sets forth the power of the true God, the Maker

(9) Query. Could the writer in the Monthly Review have seriously considered this paragraph, in his animadversions on these letters ? I think not. He evidently mistook the sentiment to be conveyed, or perhaps, thought little about it.

(3) What the eminently learned and truly excellent Mr. *Jacob Bryant* so ably accomplished in his *New System, or an Analysis of Ancient Mythology*, 3 vols. 4to. 1776, might be considerably amplified, and suitably employ the time and talents of some able scholar of the present day. He successfully traced much historical truth, blended with tradition and fable : and much physical and philosophical truth might be obtained from a like source, and the result would add new and peculiar evidence to the divine authority of revelation.

of heaven and earth, and describes the natural dominion of the elements as dependent on the power of the Creator," and points out their agency in a wide and extended economy.

In the present age, indeed in every age, it is requisite, to prevent wild and senseless speculations, which lead the mind into the vortex of infidelity; to preserve just sentiments of the works of God, and suitable conceptions of the world to come. A right view of this sound philosophy is calculated "to open the understanding, and enlarge the conceptions of the mind, by giving it a prospect of both worlds, of the one from the other, of the invisible from the visible (4)." A conviction of

(4) "That in both testaments divine things are explained and confirmed to the understandings of men by allusions to the natural creation. I say confirmed; because the scripture is so constant and uniform in the use it makes of natural objects, that such an analogy appears between the sensible and spiritual world, as carries with it *sensible evidence* to the truth of revelation; and they think, that where this evidence is once apprehended by the mind, no other will be wanted. They are therefore persuaded it may have great effect towards making men christians in this last age of the world; now the original evidence of miracles is remote, and almost forgotten."

Jones's Preface to the 2d edition of the Life of Bishop Horne, p. 16.

"In order to instruct us, the sacred scripture always places some natural object before the eye of the understand-

the harmony subsisting between the works of nature and the word of God, and of a spiritual state, will render the study of philosophy not only pleasing, but likewise instructive. It will yield a satisfaction and pleasure which is pure and refined, and afford that comprehensive view of the holy scriptures, which is delightfully impressive. It will give additional proofs of the evidence, as likewise of the excellence, of the divine testimony. Whenever the mind is fully convinced that the Bible contains the elements of all real knowledge, human and divine, it will be received more cordially, and its decisions will awaken in our breasts the liveliest zeal, and the most ardent devotion. For this purpose, the works of nature are illustrated in the word of God, to give us an enlightened view of the divine perfections, to call up the latent powers of the soul to love, to adoration, and gratitude. The Bible will be found to convey the sublimest ideas of God, and of the operations of his hands.

ing ; and as the visible word is throughout a pattern of the invisible, the figures of the sacred writers, built upon the images of nature, are as extensive as the world itself. The world being thus an image or shadow of heavenly things, *natural philosophy*, when employed in unfolding the works of creation, and applying them to their true end, is a *school* in which God is the teacher ; and all the objects of sense in heaven and earth, and under the earth, are the letters of an *universal language*, in which you and all mankind have a common interest." *Adams's Lectures, vol. 2, p. 148.*

Other philosophy may amuse and excite ingenious speculation ; but this will warm and animate the heart. It throws a lustre around the scheme of human redemption, to which all nature bears a lively testimony. That scheme is illustrated and enforced by all that is grand and beautiful in the imagery of nature. The Bible, therefore, has the preeminence above all other books in its authority, in the mind of the christian philosopher. With him "every thing will be wise or foolish, true or false, good or bad, in proportion as it promotes or hinders the belief of christianity." I know of no method so strong and effective to remove the doubts of the infidel, as to convince and persuade him that the Bible contains the only true and sound philosophy.

For this purpose, I would recommend a close and serious attention to the study of the Hebrew language (5). It has been a stigma upon our

(5) "The eminently pious and learned Mr. Boyle, one of the greatest philosophers of his time, early applied himself to the study of the Holy Scriptures in the original languages, and for this purpose went to the university of Leyden in Holland, where he received his academical education, and afterwards travelled into France, Switzerland, and Italy : during which period he made such a proficiency in the oriental languages, (which he continued for many years afterwards) that Bishop Burnet, in his funeral discourse, said that he could have quoted all the remarkable passages of the Old

modern divines, that so few of them have paid any attention to the genius and philosophy of this sacred language. That odium is perhaps gradually wearing away, and the study of oriental literature is now greatly upon the increase. It must be a disgrace to any minister of religion, that he can read and admire the loose and licentious works of Horace, and of other heathen poets, and yet not be able to read a line of Hebrew ; and more especially as the knowledge of it may be so easily acquired. A mind that is

Testament very readily in the Hebrew, or those of the New Testament in Greek. [His philosophical inquiries did not engross the whole of his time from the pursuit of critical and theological studies, in which he had assistance of some eminent men, particularly Dr. Pocock, Mr. Thomas Hyde, and others, eminent for their skill in the oriental languages.] His well directed studies, aided by his personal property, produced the happy fruits of christian benevolence. He appropriated a very considerable sum for the propagation of the Gospel among the *Indians*, and was at the charge of the translation, and an impression, of the New Testament in the *Malay* language, which he sent over into all the Indies.—He bestowed a noble gratuity on the translator of Grotius on the Truth of the Christian Religion in *Arabic*, and dispersed an impression in those countries where it was understood.—Gave 700*l.* towards an edition of the *Irish* Bible ; and contributed a like sum to an impression of the Bible in the Turkish language ; besides numerous other donations for the propagation of the Scriptures and other religious books abroad and at home.”

Life of the Hon. Robert Boyle.

constantly turning over the pages of the Hebrew Lexicon, and which has a taste for the sublime and beautiful in the works of nature, will have the finest opportunities afforded of having that taste amply gratified, and in a way that will give increasing evidence of the grandeur and divinity of the sacred volume (6). Another advantage resulting from this study, and which is not sufficiently attended to, is, that very few persons who are well grounded in this language

(6) "I recommend the Hebrew chiefly on this consideration, because the language is *in itself* instructive: its words give us light into things, in a manner different from those of any other language in the world: and this, beyond all other arguments, convinces me of its divine original. I will give you some examples.—The word *clothe*, in Latin *vestio*, in Greek *ενδύω*, gives us no instruction; but the Hebrew לבש LeBeSH, *to clothe*, comprehends the idea of בוש BeSH, *shame*, (whence the English *bashful* and *abash*,) and, with the ל prefixed, it is *for*, or on account of, *shame*; so the term not only stands for the *thing*, as in other languages, but gives us the *reason* of the thing; it refers us to the *moral* history and origin of clothing; and all this in three letters. The English word *hail*, in Latin *grando*, in Greek *χαλαξα*, gives us no information about the nature of the thing: but if we take the word ברד BeReD in Hebrew, as we took LeBeSH, it resolves itself into בר—ב, which signifies *in descensu*, and so describes to us the physiological formation of hail: which, as philosophers agree, is first formed into drops of rain, and, *as it falls*, is frozen into hail."

Jones's Letters on the Use of the Hebrew Language;
annexed to Bishop Horne's Works, Vol. 1.

become the votaries of infidelity (7). To preserve the mind from speculative doubts—to enlarge its views of the harmony of sacred truth, and to afford satisfaction and delight in connection with all the important discoveries of divine revelation, are some of the advantages attendant even upon a partial acquaintance with this language. The more enlarged the knowledge, the greater evidence will be afforded of the truth and inspiration of the word of God. This undoubtedly must be connected with the disposition: for men of the greatest minds, and of the most enlarged acquaintance with human knowledge, must read the Bible to be taught, and not as teachers. To its authority we must submit, otherwise the finest intellect will not gain that

(7) I know it may be said, that Dr. Geddes is an evidence to the contrary. There is no general rule without some exception. I have read his life, by Mr. Good, and was sorry to observe the greatest talents that could adorn human nature so badly directed. I am afraid he had no proper sense either of the truth or the importance of real religion. I have heard it said, from good authority, that, with a number of other literary characters, he was often invited to the table of an amiable and eminent prelate, who is the pattern of all that is excellent; and that his conversation became so corrupt and depraved, and his behaviour so violent and indecent, that his Lordship was compelled to prevent his future visits. Minds so deeply rooted in scepticism as that of Dr Geddes, I consider as almost irrecoverable.

accession of knowledge which we observe to be the general result of an acquaintance with the Hebrew language.

Consider, I pray you, not only the peculiar excellencies of the Hebrew language, but also the philosophy of the Bible. Upon this subject I am greatly interested, because I know and feel its many advantages. Examine it carefully for yourself: it will open a new and beautiful scene, that will much contribute to your future satisfaction and delight (8). To make a fair and candid trial of the merits of this philosophy, I would advise you to begin with the earth. To be acquainted with the globe we inhabit is certainly one of the most important branches of human knowledge; and I venture to predict, that you will seek in vain for any thing so clear, and full, and explicit, as you may draw from the language of scripture. From none of the theories, whether ancient or modern, will you find

(8) "The powers of nature are symbolical of the powers of the Deity; and are applied in that capacity in numberless passages of the sacred writings. Their operations are explanatory of the benefits we derive from him: and he who studies nature with a view to this particular use of it, and wishes to excel in theology, will find a treasure open to him which cannot easily be exhausted, and which, after long and frequent meditation, is to my mind one of the most valuable secrets in divine literature."

Jones's Physiological Disquisitions.

any thing so satisfactory as is to be obtained from this source. A right knowledge of the earth, its physical geography, as connected with its natural history, I consider to be the first step in the attainment of real and philosophical learning. Begin with the earth you inhabit (9). By an investigation of this kind you will derive new pleasure, from sources altogether unexpected ; you will be taught a most important and invaluable lesson, that the book of nature, rightly

(9) The author who has best illustrated the scripture theory of the earth, is Catcott, in his *Treatise on the Deluge*, 2d edit. 1768. Some additional proofs will be found in Jones's *Physiological Disquisitions*. If you read Burnet, Keil, Whiston, and a host of writers upon the same subject, you will observe a wide and important difference. Catcott adheres closely to scripture, and draws his materials from the plain and unequivocal meaning of the Hebrew words ; but the others indulge fancy, imagination, and hypothesis. In him the argument is well supported, confirmed by heathen testimony, and the natural state of the earth. Some peculiar advantages arise from the perusal of this book : you will gain additional knowledge ; you will perceive its operation in the illustration of many difficult passages of scripture ; have a more comprehensive view of the appearances of nature ; and be able easily to detect the infidel notions and absurdities which abound in Buffon, Hutton, Playfair, and many of the French writers upon the same subject. A very good view of the different opinions upon the cosmogony, you may obtain by a perusal of the first volume of the *Ancient Universal History*, 1747.

understood, is in harmony with the book of God, and that the one illustrates, confirms, and substantiates the other, not only in divinity, but likewise in philosophy.

If you proceed in your inquiries, much important and satisfactory information will be gained, especially in chronology and history, and also in astronomy. You have heard it perhaps repeatedly said, that the Bible does not teach us astronomy; but the persons who make such remarks overlook the connection existing between chronology and astronomy; and that the chronology of the Bible is the only history founded upon astronomical principles. I venture to assert, that the most easy and familiar mode of calculating the motions of the sun and moon is to be derived from this book. The calculation of an eclipse, without equations and anomalies; must appear very singular to some astronomers; but it may be performed with great ease, upon the very motions of the sun and moon, as given in the Mosaic writings. This is easily ascertained by those who are willing to try the experiment (10).

(10) That this has been done, I need only refer you to Peñrose's Letters on Philosophy, in correspondence with John Heaviside, Esq. 1794. From this book you may discover that astronomers have not yet settled the length of the year; and that the only method to restore the calendar to

Suppose then, Sir, that the descriptions which the Bible gives us of the works of creation be

perfect accuracy, is simply to follow the Mosaic plan of chronology, which is founded upon the most correct astronomical principles. "The only ancient people whose history can be confirmed by astronomy, were the Israelites, whose years were formed by the sun and moon jointly ; that is, the moon, by intersecting the earth's orbit, prevented the beginning of the solar year going from the appointed season. Their year always ended at the first full moon which happened either upon, or the first which succeeded after, the autumnal equinox. In imitation of this were formed the Olympiads of the Greeks, who followed the posterity of Abraham in this particular, viz. by governing the seasons of the solar year by the moon's intersections of the annual orbit of the earth. Indeed they differed from them in ending their solar year at the summer solstice ; whereas the Israelites finished theirs at the autumnal equinox. Thus the chronology of years was truly recorded by the olympic games, which were celebrated every four years, on the first full moon which happened upon or after the summer solstice. By this means they kept the beginning of their years at the true seasons ; and this no other nation has been able to do, notwithstanding the great improvements which have been made in optics, and other sciences ; neither will it be done now by the Gregorian calendar, which will vary more than an hour in one hundred years." *Penrose's Letters*, p. 15.

In these letters you will find the most easy and simple methods for calculating the places of the sun and moon, and eclipses, drawn from the cycles of the sun and moon, as taken from the festivals of the Israelites. The calculations were laid before the most eminent astronomers, and acknowledged to be correct ; and the papers would have been read before the Royal Society, had it not involved the subject of

just and rational, and calculated to enlarge the mind, and to resolve many difficulties which are far above the reach of human wisdom. Suppose it not only rational, but extremely simple and easy of apprehension, and much more agreeable to fact, and observation, and experience. Suppose it adapted to all the modern discoveries in chemistry, and natural philosophy, by which the general economy of nature is governed, and to afford likewise many additional illustrations, which are pleasing to contemplate, and which are highly satisfactory to an ingenious and inquiring mind. If upon diligent examination it should be found that there is not a single passage of scripture which has a relation to the system of nature, but what is in harmony with the most enlightened views of science—is it not then deserving your serious examination? is it not a subject altogether curious and interesting? is it not deserving the attention of every friend to divine revelation who is capable of investigating the subject? Rest assured, that these are not imaginary statements; they are the result of much inquiry, and patient trial. If you will ex-

religion; to have discussions upon which is contrary to the rules of that society. The strongest objection to this theory is, that the materials are drawn from the Bible. Could a modern infidel have discovered such a coincidence in the Koran of Mahomet, or in the writings of Confucius,—his ecstasy and admiration would have been indescribable.

amine the passages of scripture which have reference to the works of nature, you will observe a consistency, and harmony, and beauty throughout, which give the strongest confirmation to the accuracy of these remarks. I know well the common-place objections that are made by those who have neither time, nor patience, nor even skill, fairly and impartially to examine the system which they are so ready to condemn (11). Many persons inquire only for what is popular, and agreeable to the taste of the majority. They feel delight in a crowd. The objections of such persons have very little weight with me;—if they are of any weight, they must give additional support to that cause which they affect to despise. But though it may not be generally

(11) To form an opinion merely from the writings of Mr. Hutchinson, is not the way to obtain satisfaction. The same truths appear different in another form. Bishop Horne says, "I had much rather the name of Hutchinson were dropped, and the useful things in him recommended to the world, with their evidence, in another manner than they have been. Mankind are tired and sick (I am sure I am for one) with the fruitless squabbles and altercations about etymologies and particularities. In the mean time, the great plan of philosophy and theology, that must instruct and edify, lies dormant." Some readers of Mr. Hutchinson have much injured his reputation by their superficial acquirements, and by stretching a system, good in itself, beyond the limits of scripture authority.

received, you are not to suppose that it is altogether neglected. Several learned and eminent men, even in the present age, are strongly persuaded of its value. I know that this system is studied and admired, at the present moment, by men of solid learning, of much inquiry, and of deep research. I am persuaded that there is enough already written and printed upon this branch of knowledge to prevent the subject from being totally extinguished (12); and I am per-

(12) The following select list of books I recommend to any who may wish to examine what may be said in favour of the philosophy of the Bible. Account of the Mosaic Creation, by Philo, 8vo. 1819; the works of Julius Bate, particularly his *Mosaic Philosophy Defended*, and *Hebrew Lexicon*, 4to. 1760; Callimachus, translated by Dr. Dodd, *the Notes said to be written by Bishop Horne*, 4to. 1755; Catcott on the Creation, in Answer to the Bishop of Clogher, 1756; Catcott on the Deluge, 2d edition, 1768; Cooke's, W. *Enquiry into the Patriarchial and Druidical Religion, with an account of Abury and Stonehenge*, 4to. 1756; Digby's *Lectures*, 1787; Forbes's *Works*, 2 vols. 1753; Horne's *Works*, 6 vols. 1805; Hutchinson's *Works*, 12 vols. 1748; Jones's *Works*, 12 vols. 1800; Kennedy's *Scripture Chronology*, 4to. 1762; Lee's (Henry) *Sophron*, 3 vols. 12mo. 1758; Park's (Mr. Justice) *Memoirs of William Stevens*, 8vo. 1815; Parson's *Remains of Japhet*, 4to. 1767; Penrose's *Letters on Philosophical Subjects*, 1794; Pike's *Philosophia Sacra*, 1753; Spearman's *Inquiry after True Philosophy and Theology*, 1755. To which I would add, *Veteris et Veræ Philosophia Principia*, 1738. This pam-

suaded also, that very few persons make the examination, with a desire of being convinced, without being finally led to this interesting result—that the Bible contains true and sound philosophy (13).

I am, Dear Sir,

Yours, &c.

phlet, with some curious plates relative to the planetary motions, was written in Latin by Mr. Catcott, and afterwards submitted to Mr. Hutchinson, who approved of it. The author of this book has a translation, in a state of forwardness for publication.

(13) But of all these writers I prefer the philosophical works of the late Rev. W. Jones, as deserving more particular attention. He took his own ground, and had a mind peculiarly formed for investigations of this nature. His writings are calculated to enlarge the mind with the most correct views of the works of creation, and in strict conformity with the best experiments in natural philosophy. Posterity, I am sure, will do justice to his writings, for they contain a fund of knowledge, independent of the peculiarities of his system. Of his attachment to the scripture philosophy, and his ability to defend it, I need only request you to read, and think for yourself. At the conclusion of his introduction to his *Physiological Disquisitions*, he expresses a singular conviction of its influence with posterity. "I know that every author must commit his works to the times in which he writes, whether they are favourable or adverse to his undertaking; and when he has launched his vessel, he must leave it to the chance of the wind and weather. My mind, however, sug-

gests to me, that this book will not be totally thrown aside and forgotten. That natural agency of the elements for which I have pleaded, and which I hope to carry farther, (however imperfectly) is so reasonable, so striking, so intimately interwoven with the most agreeable and interesting parts of literature, that it must, when it comes to be better understood, find friends and favourers either in this country or some other : with abilities to defend what shall have been rightly done in this great subject, and to improve it by their own more successful labours."

That the Bible contains true philosophy, is agreeable to the sentiments of the best writers in former times ; and novelty is on the side of those who maintain the contrary opinion. We are frequently told that "the seat of this most noble Philosophie is, in the sacred Scriptures, stiled **גן עדן** *the Garden of Eden*. For there is nothing more excellent given by the great God to mankind, than that pleasure, which ariseth from the contemplation of things. The *Chaldees* call this *Garden of Pleasures* **פֶּרֶדִּים**, and the *Greeks*, following them, **παράδεισος**, *Paradise*." Hornius repeats the same—"All Arts, as mankind, had their beginning from *Adam*, who, among the pleasures of *Paradise*, learned Philosophie even from God himself."—And Keckerman, Tract. 2, Log. cap. 2, says, "that he doubts not, but that our first parents delivered over to their posterity, together with other sciences, even Logick also, especially seeing they, who were nearest the Origine of all things, had an intellect so much the more excellent than ours, by how much the more they excelled us in length of time, air, food, health, &c."

Vide Gale's Court of the Gentiles, Part 2, p. 8.

LETTER XI.

ORIGIN OF PHILOSOPHY.

I am inclined to believe that all the most antient nations derived some rudiments, both of natural knowledge and religion, from the sons of Noah ; but with some of them that philosophical learning failed sooner than with others ; and even sometimes without any one observing it, by reason of the length of time, so that not any memory or footsteps have remained of it.

DR. THOMAS BURNET.

DEAR SIR,

That the sacred scriptures contain the original elements of knowledge, cannot appear strange to any person, who is fully convinced of their divine authority ; and that the more they are studied and circulated, the greater is the diffusion of general knowledge. Literature and science are more indebted to the influence of revealed religion, than to any other source whatever ; although its individual professors often treat it with the greatest contempt. It has been the practice of some persons, who have been unfriendly to the sacred volume, not to attack it immediately, or avowedly ; but in an indirect or

covert form. They unsettle the public mind, and assault the faith and hope of the christian, by stratagem, and gradually obscuring the facts and principles which it presents to our view. Such has been the practice of modern politicians and philosophers, who have speculated on the original condition of man, the nature of the human mind, the origin of language, and the progress of society. You may peruse a great variety of authors upon these subjects, without adding any thing to your real improvement ; and after exhausting much time and expense, you must return to the Pentateuch of Moses, in order to find any thing like soberness and truth (1). In vain will you seek for

(1) " And we may generally observe this of the antients, that their learning or philosophy consisted more in conclusions, than in demonstrations ; they had many truths among them, whereof they did not know themselves the premises or the proofs ; which is an argument to me, that the knowledge they had was not a thing of their own invention, or which they came to by fair reasoning and observations upon nature, but was delivered to them from others by tradition and ancient fame, sometimes more publick, sometimes more secret : these conclusions they kept in mind and communicated to those of their school, or sect, or posterity, without knowing for the most part the just ground and reasons of them."

Burnet's Theory, vol. 1, p. 4.

In this celebrated theory of the earth, the writer took reason for his first guide ; and when that failed, he had recourse to the sacred writings. Had he taken an opposite course,

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better, or more substantial information, or more rational and consistent knowledge, than what the scriptures afford. Language, when cultivated, is intimately blended with the progress of useful knowledge ; and the divine origin of the one, naturally leads to the divine origin of the other.

Many attempts have been made to prove that man might possibly acquire the knowledge of language without instruction ; but I think it may now be said, that all such attempts have proved abortive. Even the origin of alphabetic writing must be traced to revelation (2). Language is

and made scripture the standard of authority, and reason only subservient to its discoveries, his mind might have been preserved from those vain conjectures, by which his work is so much characterized.

(2) “ The first five books of the *Old Testament*, are I believe acknowledged by all to be, not only the most antient compositions, but also the most early specimens of *Alphabetical Writing*, at present existing in the world. Now, if alphabetical writing be indeed the result of human ingenuity, one great peculiarity distinguishes it from all other *human inventions* whatsoever : the very first effort brought it to perfection. All the sagacity and experience of succeeding generations, illustrated as they have been by a vast influx of additional knowledge, beyond the most accomplished of their predecessors, have been unable to superinduce any real improvement upon the *Hebrew alphabet*. This seems to me a singularity utterly irreconcilable to the common hypo-

not intuitive, but evidently acquired by imitation and instruction (3). If it was intuitive, we

thesis : at least, I am acquainted with no plausible answer to this objection."

Vide a most excellent essay "*On the Origin of Alphabetical Characters*, by Gilbert Wakefield, B. A." in vol. 2, of the Manchester Philosophical Society's Papers, p. 278.

When *Quintus Curtius* described the city of Tyre, he assures us that the *Phœnicians* were the first inventors of letters, and the first that communicated the knowledge of them to others. The letters which *Cadmus* had taught the *Greeks*, were carried, it is supposed, to *Italy*, by one *Evander*, an *Arcadian*. *Petrus Crinitus*, who flourished in the year 1304, and was pupil to one *Politianus*, and *Lilius Giraldu*, who lived in the fifteenth century, and *Vossius*, likewise, quote the following verses, from his poems on education, found in an old manuscript :

" *Primus Hebræus Moses exaravit Literas ;*
Mente Phœnices sagaci condiderunt Atticas :
Quas Latini scriptitamus edidit Nicostrata."

That is,—*Moses* was the first inventor of the *Hebrew* characters. The *Phœnicians* taught the *Greeks* their letters And *Nicostrata*, (mother of *Evander*) was the first that introduced them among the *Italians*.

Vide *Inquiry into the Origin and Antiquity of Letters* by the Abbot *Anslem*, Member of the Royal Academy of Inscriptions and Belles Lettres, at Paris ; also *Goguet's Origin of Laws, Arts, and Sciences*, vol. 1, p. 182.

(3) That language is not innate, or natural to man without the aid of instruction, will appear evident from a singular

should all speak one language, without any variation of dialects; and those who are born deaf, would not be dumb. The first father of mankind had no speakers to imitate, and no language to study (4). But all this is consistent with what is said in the Bible; and because it is

account published some few years since by Bonnature, Professor of Natural History in France, concerning the savage of Aveyron. The pamphlet contains various details relative to a child found in the woods, and possessing all the characteristics of a savage animal; feeding on acorns, roots, &c. He was incapable of articulating a single sound. Although taken several times from the forest and brought into society, this child always found means to escape; constantly preferring a vagrant and erratic life. As to his faculties of sensation, they approximated to the brute creation—the smell occupied the first rank—the taste the second—but the sight, the hearing, and touch, were far from being perfect. He was not wholly deaf, but could hear a very shrill voice. His sole pleasure was repose, and his most prominent desire, that of independence. For several years he had lived in a forest, at a distance from mankind.

(4) Dr. Beattie, in his *Essay on Language*, observes:—
 “Speech, if invented at all, must have been invented either by children, incapable of invention, or by men, who from the rigidity of their organs were incapable of speech; in either case, an impossibility. And therefore, reason, as well as history, intimates that mankind in all ages must have been speaking animals—the young having acquired this art by imitating those who were elder; and we may warrantably suppose that our first parents must have used it by immediate inspiration.”

consistent, it does not please the modern philosopher ; he must invent some other theory, more agreeable to his taste, and more congenial to the feelings of a corrupted heart. The infant is taught to speak by example, or imitation ; the progress is gradual and difficult, and when advanced in life he acquires the knowledge of other languages by reading, and under proper instructors. But the question naturally returns, how did our first parents acquire the knowledge of language, seeing they had no speakers to instruct, and no grammar to study ? The Bible solves the question ; but man is dissatisfied with the account. He wanders far and near, and all his speculations terminate in darkness and visionary infidelity (5).

Language is requisite for all the purposes of human life, connected with the exercise of reason and religion, and essential to the happiness of social life. We cannot think without

(5) " We are warranted by divine authority to conclude, that at the beginning one male and one female only were created ; from whom the human race derive their existence. This sacred assurance gives us room likewise to believe, that the first pair came from the hands of the great Creator complete and adult ; that is, from the first moment of their existence, they were endued with all the powers of body and faculties of mind, which their descendants are not capable of attaining but by a tedious progression of improvement."

Dagge's Considerations on the Criminal Law, p. 19, 1772.

words (6). From the Bible then, it appears, that man was not ushered into the world in the rude, or savage, or barbarous state, but with a mind cultivated and refined, endowed with the capacity of reason, the powers of language, and with a competent degree of useful knowledge (7).

(6) The Greeks expressed reason and words by one and the same term, *λογος*; probably from a conviction that they are inseparably united.

(7) Dr. Delany fully proves, that revelation was necessary to man, even on the supposition of his being formed in the utmost perfection of which his nature is capable; and he comes to this obvious conclusion, the most reasonable and satisfactory, after an investigation of the almost endless variety of opinions on the subject. "The consequence from all which is, that the perfection and felicity of man, and the wisdom and goodness of God, necessarily required that Adam should be supernaturally endowed with the knowledge and use of language. And therefore, as certain as it can be, that man was made perfect and happy, and that God is wise and good: so certain is it, that when Adam and Eve were formed, they were immediately enabled by God to converse and communicate their thoughts in all the perfection of language, necessary to all the ends of their creation."

Revelation examined with Candour, vol. 1, p. 39.

For a review of the different opinions on the origin of speech, and the original language, you may consult the *Antient Universal History*, vol. 1, p. 340. After all that has been said upon the subject, I believe that the Hebrew has the greatest claim to being the first and original language. Infidels do not wish it to be so, and they strongly oppose it; and too many christians give sanction to their sentiments.

He was qualified to become the father of mankind, and to lay the foundation of a superstructure which should afterwards be erected. How far he was instructed, we are not precisely informed ; but enough is said to prove that his knowledge was neither superficial nor unimportant (8).

(8) "Our first father differed from all his descendants in this particular, that he was not to attain the use of his understanding by a gradual process from infancy, but came into being in full stature and vigour of mind as well as body. He found creation likewise in its prime. It was morning with man and the world. We are not certain with regard to the time allowed him to make his observations upon the different objects with which he found himself surrounded ; but it should seem either that sufficient time was allowed him for that end, or that he was enabled in some extraordinary manner to pervade their essences and discover their properties. For we are informed, that God brought the creatures to him, that he might impose upon them suitable names ; a work, which in the opinion of Plato must be ascribed to God himself. The use and intent of names, is to express the natures of the things named ; and in the knowledge of these natures, at the beginning, God, who made them, must have been man's instructor. It is not likely, that without such an instructor, men could ever have formed a language at all ; since it is a task which requires much thought ; and the great masters of reason seem to be agreed, that without language, we cannot think to any purpose. However that may be, from the original imposition of names by our first parent, we cannot but infer that his knowledge of things natural must have been very eminent and extensive ; not inferior, we may suppose, to that of his descendant, king

But perhaps you are convinced, and willing to concede, the truth of the Mosaic account of the origin of language, and admit that it proceeded from the Almighty (9). But what

Solomon, who “*spake of trees, from the cedar to the hyssop, and of beasts, and fowl, and creeping things, and fishes.*” It is therefore probable, that Plato asserted no more than the truth, from the traditions he had gleaned up in Egypt and the East ;—that the first man was of all men *Φιλοσοφατατος*, the greatest philosopher.” *Horne's Sermons, Disc. 2.*

(9) “Upon the divine origin of language, I need only refer you to Dr. Magee on the Atonement, No. 53 of the Explanatory Illustrations, in which the subject is ably discussed, and the argument maintained with an acuteness of mind, and extent of learning, rarely equalled. The same opinion is sanctioned by Drs. Beattie, Blair, Delany, Ellis, Johnson, Stanhope, Smith, and Warburton, with many others. I give the following as a specimen.

“We see by scripture, that God instructed the first man in religion. And can we believe he would not at the same time teach him language, so necessary to support the intercourse between man and his maker ?”

Warburton's Works, by Hurd, vol. 4, p. 391.

“Now we have reason to suppose, that Adam, during his state of innocence, held constant communication with the Deity, from whom he received information of things, and was directed in the use of them.”

Law's Theory of Religion, p. 44, 1755.

“We may then conclude, with great probability, that language was nearly coeval with thinking, by the power and will of God. The first man was taught language by revelation.” *Winder's History of Knowledge, p. 11.*

has this opinion to do with the origin of philosophy, and with the importance of those principles said to be discoverable in the Hebrew scriptures? How does this prove the truth of the scripture philosophy? I say, it strongly corroborates and sanctions the opinion which we endeavour to maintain. If the knowledge of language was communicated to the first man, the materials of knowledge were given at the same time. It is allowed, perhaps, that some religious knowledge was necessary; but we maintain, and who can disprove it, that religion and true philosophy are closely allied. Language is necessarily clothed in natural imagery, borrowed from all the forms and varieties in the creation. If the Almighty condescended to instruct our first parent in language, either immediately or not, the imagery borrowed, we say, was perfect, and agreeable to fact and experience. There is nothing to oppose this theory, that is really worthy the attention of any real and well disposed believer in divine revelation. A knowledge of the works of creation was necessarily conveyed in the gift of language; and the argument will appear irresistible, when it is recollected that the author of nature condescended to be the willing instructor of our progenitor, either immediately or by a supernatural agency (10).

(10) What is there irrational in the assertion of Gale, or

If Adam was taught language, and so instructed as to give suitable names to the different

what more consistent with reason or sound philosophy? His sentiments are well supported by the testimony of ancient writers. "The first created divine *institutor* of all philosophy, was Adam, who without all peradventure, was the greatest amongst mere mortals, that ever the world possessed; concerning whom the scripture tells us, Gen. ii, 19, 20,—That *he gave names to every living thing*, &c.; which argues his great sagacitie and philosophick penetration into their natures. For like as our conceptions, if true, so also names, if proper, should be so as we may presume at first were no other than *εικόνες τῶν πραγμάτων*, images of all things. So both Aristotle and Plato call names, *μιμήματα*, imitations of things. Adam could by his profound philosophie, anatomize and exactly prie into the very natures of things, and then contemplate those glorious ideas and characters of created light and order, which the increased light and Divine wisdom had impressed thereon; and thence he could by the quickness of his apprehension, immediately collect, and forme the same into a complete systeme or bodie of philosophie; as also most methodically branch forth the same into particular sciences, &c.; whereas all philosophers since Adam, having lost, by his fall, this philosophick sagacitie of prying into the natures of things, they can only make some poor conjectures (in comparison) from some common accidents, and the external superficies, or effects of things; and therefore cannot receive conceptions, or give names exactly suited to the natures of things, as Adam before them did."

Gale's Court of the Gentiles, part 2, p. 7.

The argument in the above note is used with peculiar force by Dr. Magee, on the Divine Origin of Language; but I see no reason or propriety in separating the opinion of

tribes of animated being, and that with the accuracy of a philosopher, according to their peculiar natures, what is there unreasonable in the supposition that he was taught the true system of the universe? What is there improper in supposing that he was taught a right knowledge of time by the motions of the heavenly bodies? or that he was taught the elements of astronomy, in reference to chronology and history, and all this for the advantage of future generations? What is there mysterious in the supposition, that he understood that the sun and moon, *and even the stars also*, were made for *signs and seasons, for days and for years*? I know not that there is in this supposition any difficulty or misconcep-

Gale, and applying it merely to language. Names and things are intimately connected. With proper names a right knowledge of things was communicated. The argument appears with equal strength in favour of scripture philosophy. Objections to it are merely arbitrary, and generally very speculative. It will not accord, it is true, with the imaginary picture of the origin of society, as drawn by a few Scotch philosophers, whose views appear directly opposed to the authority of the scriptures. That man existed in the ruder and savage state, previous to the deluge, and for a long time after, is contrary to reason and sound philosophy. These sentiments are circulating in Cyclopædias, and through other channels, to the detriment of religion, and to the no small delight of the enemies of the Bible.

Vide Blackstone's Commentaries, vol. 1, p. 46.

tion, any thing contrary to sound reason, or the knowledge we possess of antiquity, or the discoveries of modern science, or the plain unvarnished letter of the sacred scriptures (11). You will find nothing to contradict this statement, but what comes directly or indirectly from those who are opposed to revelation in all its forms ;

(11) " It appears to me that the Patriarchs and Chaldeans had more knowledge in astronomy than is generally attributed to them. Nay, it appears, by what I observed in my last letter, on the lunar motions, that they knew very well how to calculate the return of an eclipse. It is allowed by all, that we received the cycle of 18 years, for the calculation of the return of eclipses, from them ; which is called the *Chaldean Cycle* to this time.. We also received the lunar cycle of 19 years from them ; for we are certain that *Meto*, the *Athenian* astronomer, made use of it more than 430 years before Christ. Now, Sir, take away these two cycles from astronomers, and they will find themselves at a great loss, notwithstanding the astonishing improvements in arts and sciences, particularly in optics. For my part I do freely acknowledge, (notwithstanding it is so unpopular to do it, in an age when all speculations which aggrandize the dignity of reason are so eagerly received,) that I cannot conceive how Adam, just after he was created, could have knowledge and understanding sufficient to give *ideal* names to all animals, unless that power was given from God. If God gave him a power to speak and understand language, is it unreasonable to suppose that he had instructions from the same original how to calculate and know when the seasons were which God had commanded him to keep holy ?"

Penrose's Letters, p. 384.

who are desirous of setting up the idol of their own imaginations, to gain the admiration of the ignorant and the profane; who are ready to welcome every speculative opinion that is calculated to sooth their corrupted passions, and to stifle the convictions of the truth and importance of revealed religion.

If Adam was instructed in the elements of science, and the real economy of nature, it must be clear that he communicated that knowledge to his children, and these again to their posterity. I see no inconsistency in supposing him not only the first, but the greatest of philosophers. He had his knowledge from a pure and uncontaminated source; and what we know of ancient times, from revelation and profane history, and the fragments of learning and science yet remaining, give confirmation to the opinion; so that it comes home to the mind with all the force of demonstration. It is a favourite sentiment with a class of modern philosophers, to represent the earliest ages, and especially the Jewish nation, as wandering in a state of comparative darkness, both as to philosophy and religion; and that their ignorance was so great, that the whole of their ceremonies and institutions may be considered "as children's toys" (12), when compa-

(12) I heard of a young preacher lately, who had the au-

red with the enlightened age in which we live. I have heard such things repeated, from those who would be thought, and even profess themselves to be, the friends of divine revelation. I must confess that I very much doubt, when I listen to such assertions, the sincerity of their attachment to the christian cause, which they apparently profess to venerate. The natural tendency of such opinions, is to eradicate from the mind all due regard to the institutions recorded in the Bible, and to lead us away from the clear and beautiful harmony existing between the Jewish and Christian Dispensations : for, however diversified as to outward rite and ceremony, they are essentially but one and the same religion (13).

dacity to vent such trash before a christian auditory. He might perhaps get his lesson from Warburton, or from Dr. Priestley, or Mr. Belsham, or Mr. Aspland, or Voltaire ; but one thing is evident—that he did not get it from the Bible. The antient philosophers would have taught him better divinity.

(13) “ If we were once well acquainted with the nature and properties of the water at the spring-head, we might easily, by following the current down again, perceive when and how it became adulterated and corrupted with adventitious mixtures. The Mythology of the *Greeks* and *Romans*, who lived in the midnight of Paganism, just before the day dawned, and the sun of righteousness arose upon the earth, is one vast ocean of confusion, which ingulphed into itself all the

With the origin of language and the first condition of man, is interwoven all the arguments respecting a state of nature—natural law—or of moral philosophy (14). To have the mind well instructed upon these topics, will enable you to detect many specious refinements and glaring defects, in the discussions of the modern sceptic, and infidel philosopher. A state of nature such as is represented by these writers, could never exist in reality, but in the chimeras of a speculative and deluded imagina-

broken traditions of theological, physical, and historical truths that came near it, and converted them into fables, changing the truth of God (as the Apostle speaks of them) into a LIE. Accordingly, if we look into the muster roll of their gods, and the facts related of them, we shall find some owe their birth to the great things revealed to believers from the beginning concerning the Saviour of the world, and what he was to be, to do, and to suffer, for the salvation of men. These may be put to the score of *theology*. Another set of gods are the operations of nature, and the mechanical agents that perform them, deified, which may therefore be said to have a *physical* divinity; while a third part of the annals of heaven is made up of broken and disjointed fragments concerning heroes and heroines that lived, or were reported to have lived and acted upon earth; and these venerable personages cannot, I think, be allowed more than an historical godhead."

Dodd's Preface to the Hymns of Callimachus.

(14) Dr. Paley, thus defines it—"MORAL PHILOSOPHY, Morality, Ethics, Casuistry, Natural Law, mean all the same thing; namely, *that science which teaches men their duty and the reasons of it.*" Chap. 1, of the *Moral Philosophy*.

tion. What has been so called relative to the distinction between a barbarous and civilized state is generally assumed without any just authority, and not drawn from historical fact. Such a state could only exist partially, confined to a few detached spots of the globe by a few hordes cut off from the advantages of a civilized life. The majority of mankind have ever been connected, with cultivated and civilized society, enjoying the benefits of social life (15).

All just law is to be traced to one original, divine, and established source, and is necessarily connected with theology, and ought not to be separated in its joint influence on the state of society; they eventually aid and support each other (16).

(15) "A state of nature, then, did never naturally exist, unless qualified, and as it were, in part; namely, while some party of men joined with some more in a civil body, or in some confederacy like that; but still retained a natural liberty against all others."

Puffendorf's Law of Nature and Nations, p. 109, edit. 1729.

Read the very excellent notes to this edition, and also to Grotius on War and Peace, edit. 1739.

(16) "Since therefore nothing is more excellent than reason, which is common to God and Man, the first rational society, is between God and man. For where there is a participation of reason, there is also a mutual participation of right reason. Now this being a law, we are to conclude, a society between the gods and man founded on law. Far-

No government can long exist, without the aid and sanction of religion (17). Both, when founded upon just principles, are agreeable to an established order in the moral government of God, and contribute to the harmony of society. In every law, there must be an agent to propose, and a patient to receive it ; consequently, there can be no law of nature, abstractedly considered. The definition of a law, by the most enlightened authors, would lead to the same conclusion, which is a thing proposed to the human

ther, where there is one common law, there is likewise a common right ; and those who hold them in common, are to be esteemed as it were fellow citizens."

Cicero de Legibus, Cap. 7.

"Of Law no less can be acknowledged, than that her seat is the bosom of God, her voice the harmony of the world. All things in heaven and earth do her homage ; the very least as feeling her care, and the greatest as not exempted from her power." *Hooker's Polity, Book 1.*

(17) "Religion, though of itself it tends to procure us the favour of God, yet it has likewise its peculiar effects, and those very great, upon human Society. Nor is it undeservedly called by *Plato*, *The bulwark of Power, and the bond of Laws and good manners*. *Plutarch*, in like manner, calls it, *The cement of all Society, and the foundation of the legislative power*. And, according to *Philo*, *The worship of one God is the most effectual charm, and indissoluble tie of Kindness and Friendship*. Irreligion is attended with all the contrary effects." *Grotius on War and Peace, p. 440.*

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mind, and from its authority binding upon the conscience and determining to action (18).

The modern infidel, who attempts to derive his religious principles solely from nature, or what is called the reason and fitness of things, can obtain no fixed code of government, or accurate views of moral obligation. The nature of things being silent, and in many instances difficult, intricate, and uncertain, could never impose a moral obligation which must arise from a superior and intelligent power (19). Our reason, being governed by discordant passions, is insufficient, and must ever fluctuate, without some infallible expositor and guide. The power of comparison, termed reason, must be trained by some higher power, and regulated by known and established principles. Natural law, as to its fundamental basis, was originally derived from

(18) " Law is a rule of action prescribed by authority."

Halifax's Analysis of Roman and Civil Law, p. 4. 1799.

Vide also *Blackstone's Commentaries*, vol. 1, p. 39.

(19) " The fitness or unfitness, which may be termed the *natural morality* of actions, is indeed a reason for acting, or not acting ; but then it is not such a reason as imposes an indispensable necessity, which is implied in the idea of an *Obligation*. This necessity can come only from a *superior*, that is, from some intelligent Being existing without us, who has a power of restraining our liberty and prescribing rules for our conduct."

Grotius on War and Peace, p. 10, Note.

some revealed law, either immediately or traditionally (20). The modern sceptic often uses the term, without affixing to it any clear or distinct meaning, or tracing it to its original source. We may therefore justly conclude, that what is called natural religion cannot furnish us with the principles of moral truth and rectitude. The Almighty has implanted in the breast of man, a disposition to receive and cultivate the impressions of a moral sense ; but not the science itself, which is the result of reflection and comparison, between known and established truths often reviewed and considered. Dreadful had been the state of man, in his present condition, had he been left to his own discoveries of moral truth (21). The wanderings of a depraved ima-

(20) Consult *Ellis's Knowledge of Divine Things*, upon the subjects of this chapter.

(21) "In reflecting on the religion of the Chinese, or rather their superstition, there seems to be elicited one great and evident maxim, which is, that in the example of China, the most refined and civilized nations of the world, unenlightened with divine Revelation, are of point of religion, on the common level with the most barbarous and uncultivated nations : that even the inhabitants of the most isolated portions of the globe, and the natives of the South Seas have equal, if not more exalted conceptions of a Deity, than the boasted wisdom of China any where discovers : and herein is proved by an infallible and universal testimony, the assertion of the divine Apostle above quoted, "*that the world by*

gination ever terminate in darkness and confusion. The heathens possessed much light and knowledge, from traditionary information. To suppose they possessed no benefit from the light of revealed truth, is a sentiment void of all evidence, and contrary to well authenticated facts. The laws and constitution of England recognize the scriptures as a basis; and the Bible has become part of our national code—incorporated with all our institutions and customs; and in their connection have contributed to elevate the national character in the gradual progress of society: and to this combined influence we owe some of the greatest blessings in civilized and social life. The Deist may attempt to dissolve this connection; but the attempt is vain and presumptuous, for it is at the peril of a revolution. Nothing less than a revolution can effect his purpose—the destruction of the present frame of society, and the annihilation of the established form of government. The modern revolutionist is not a stranger to this connection,

wisdom knew not God:" nor could in any ways attain a knowledge of his eternal and unchangeable attributes. It is certain also, that if we look for any thing, like natural religion, or natural theology, it must be sought in the enlightened empire of China, where it is to be found in all its native perfection, and where its pestiferous fruits have been matured, and displayed in the tyranny, the despotism, and cruelty of that empire." *Yeates's Indian Church History*, p. 199.

and warily begins, by an attempt to sap the foundations of revealed religion—and if in this he is successful, he has sufficiently prepared the way, and can then engraft any Utopian views of civil policy, which may appear beautiful in speculation, but if brought into practice, would soon terminate in anarchy and confusion. The Bible is the key-stone to the building—remove it, and the whole will tumble into ruins (22).

(22) “The constitution of England, like that of most countries in Europe, hath grown out of occasion and emergency ; from the various policy of different ages ; from the contentions, successes, interests, and opportunities, of different orders and parties of men in the community. It resembles one of those old mansions, which, instead of being built all at once, after a regular plan, and according to the rules of architecture at present established, has been reared in different ages of the art, has been altered from time to time, and has been continually receiving additions and repairs suited to the taste, fortune, or conveniency of its successive proprietors. In such a building, we look in vain for the elegance and proportion, for the just order and correspondence of parts, which we expect in a modern edifice ; and which external symmetry, after all, contributes much more, perhaps, to the amusement of the beholder, than the accommodation of the inhabitant.”

Paley's Moral Philosophy, chapter 7.

The remarks of Dr. Paley, are often just and accurate ; but his mind appears not to have been sufficiently impressed with the authority and value of the sacred writings, as the foundation of morals, and correct thinking. Neither does the Bible, as the foundation of moral truth, have that pro-

Those persons who have been accustomed to view revelation as opening new sources of natural as well as spiritual knowledge, have a field for investigation, extensive and useful, and which presents the mind with fresh evidence of its value in every step of its progress. They form more correct notions of antiquity, and possess a key which will unlock hidden treasures, which lie concealed from superficial readers, and that in the most interesting and edifying way. The different religions of Heathen and Mahometan superstition will appear to have borrowed their first materials from divine revelation, and remain as a striking witness to confirm its authority. Opinions in philosophy may likewise be traced to one common origin, which were at first pure and uncontaminated. Many passages in the classic authors, which refer to the physical principles in nature, may be traced to this source, and explained in such a way as to give testimony to this sentiment; the resemblance is easy of apprehension, and confirmatory of the

minence in his works, which might be wished; and this defect is the more to be lamented, considering the general utility and established authority of his writings. The Law of the Scriptures ought to have been more accurately defined, and its extensive application more minutely traced; and should undoubtedly have preceded, "the Law of Honour, and the Law of the Land." *Vide Chapter 1, ibid.*

sacred writings (23). The rapid progress of infidelity upon the continent of Europe, and the complete demoralization of its inhabitants, through the baneful influence of metaphysical science, astronomical fable, and visionary speculations, aided by the perverseness of human nature (24), in all probability will continue to operate upon the cause of truth and revealed religion. The professors of christianity will be compelled to examine more closely the foundation of their principles, especially in this country,

(23) "The articles of wine, flour, cakes, oil, honey, incense, salt, were all used by the heathens, as in the law of Moses ; insomuch, that I heard it once observed by a learned man, to whom I looked up for much information when I was young, that even Homer alone, in the circumstantial of sacrifice ; would nearly furnish us with the particulars of the Levitical ritual." *Jones's Letter to Dr. Vincent, p. 12.*

(24) "There is, (says Shaftesbury) a certain perverse humanity in us, which inwardly resists the divine Commission, though ever so plainly revealed." The words were once spoken on a particular instance, but hold true in him with regard to the whole Revelation. There is no want of evidence in divine philosophy ; but there is in man a pride and over-conceited opinion of reason, an affectation of superiority of judgment, a love of novelty and singularity, a pleasure in opposing generally received and established truths, together with a petulant inflated libertine spirit of unbelief in man, which, though it discerns the light, will not acknowledge or admit it."

Ellis's Knowledge of Divine Things from Revelation, p. 212.

as these opinions will be circulated, by means of the press in every direction. I know of no method so likely to meet the evil, in all its magnitude and extent, as the evidence arising from the philosophy of revelation, which has so many claims upon the public attention, and which, when properly understood, and clearly explained, will appear the most powerful weapon that can be employed to silence the adversaries of truth, and to repel the artful sophistry of modern infidelity.

I am, Dear Sir,

Yours, &c.

LETTER XII.

ON BEAUTY AND SUBLIMITY OF STYLE.

*False eloquence, like the prismatic glass,
Its gaudy colours spreads on every place.
The face of nature we no more survey,
All glares alike, without distinction gay.
But true expression, like th' unchanging sun,
Clears and improves whate'er it shines upon ;
It gilds all objects, but it alters none.*

POPE.

DEAR SIR,

Allowing for the speculative tendency of Dr. Chalmers' Discourses, you suppose that I must feel "greatly delighted with the beauty of the imagery and sublimity of the language." You conceive the production, abstractedly considered, must at least afford "high gratification and mental enjoyment." Your surprize will increase when I tell you, that even in this respect I am not satisfied (1). I have read some of

(1) The writer in the British Review seems to have exceeded the general tone of acclamation. "It appears, indeed,

the lofty and extravagant encomiums which have been written, and heard the general shout of acclamation, and read the book attentively and repeatedly ; and cannot find any passages so wonderful or extraordinary as to command this notoriety and public applause. There are some paragraphs, indeed, which I admire (2), and

to be the habit of this writer to exhaust his subject before he relinquishes it. As long as in the permutations of language a power remains of shifting, expanding, or re-casting his leading idea, his mind remains engaged in its service. With Cicero's powers of amplification, he has found in the vastness of his theme, and in the play and pliancy of his perfect, but more copious idiom, advantages from which Cicero and the ancients were shut out ; and perhaps, in sparkling vigour of expression, opulence and controul of diction, and a profound feeling of his subject in all its capabilities and aspects, scarcely any writer, ancient or modern, can stand a comparison with the author of these Discourses." No. 19, p. 19.

(2) " Though we cannot say that Dr. Chalmers has presented us with any thing very new in argument, or even in the matter of his descriptions, nor that we have any anxious fears for christianity on the side on which he has thrown up an additional rampart ; yet, for elevating views of the Majesty on high, for apt illustrations of the providential care of the Creator, for reconciling the extremes of glory and condescension, for combining the perfections of Jehovah Jesus in the blessed fruits of righteousness and grace, and especially for the lines and characteristics of correct religious feeling, drawn with such precision in the last discourse, we cannot testify to Dr. Chalmers, in terms above his merit, the

which do great credit to the talents of the author ; but there is nothing so wonderful as to

sense we entertain of his labours. These properties of his work are now in operation ; the first glance of beauty has been shot ; the brilliance, which at first was almost *nimum lubricus aspici*, is improved into a steadier lustre ; our pleasure becomes more profound, and our heart more permanently engaged. This is a true test of the merit of the performance, a sure earnest of its lasting celebrity ; and on this experience we found our opinion, that Dr. Chalmers is no meteor, but a fixed star in that firmament of science, which he has taught to shine with the radiance of the gospel." *British Review*, No. 19. p. 9.

In a panegyric upon Dr. Chalmers' Discourses, by a writer in the *Eclectic Review*, we are told, " any notion that the other planets of the solar system were created for this earth, would be now too ridiculous for the grossest ignorance to dream." Again—" When to the consideration of the extreme improbability of immense conformations of matter being made to be devoid of the occupancy of mind, is added the whole account of the ascertained points of analogy between the other planets and our own, we think that, excepting to minds *repugnant to magnificent ideas*, the probability that the other orbs of our system are inhabited worlds, must appear so great, that a direct revelation from heaven disclaiming the fact, would make but little difference in our assurance of it." *Eclectic Review*, Vol. 8. p. 212, 1818. Principles assumed, and consequences drawn, without proof, are the result. If the reader wishes to have a specimen of English composition, more turgid and inflated than Dr. Chalmers' Discourses, with more involved sentences and abstruse periods, and many fine words instead of those which ought to be plain and intelligible, I would recommend

make it the miracle of the age. I would apply the same remark to his talents as a preacher. He is a good preacher, but not so profound, or correct, or astonishingly great. I have listened to many fine things that have been said, or reported to have been said, by men of taste, knowledge, and piety, with mingled emotions of pity and astonishment. Report generally exaggerates. One had received "a shock of holy electricity;" another had been "sublimated in the crucible of this spiritual chemist;" another had been "carried to the third heaven;" and a fourth had been so attracted, that "he could have sat for ever under the droppings of the skies." Much of this is mere enthusiasm, and the result of popular effervescence. The admiration of the multitude is often caught by that which is eccentric, novel, or strange (3). If it

to his perusal this article. But what is more extraordinary, some persons think this article *wonderfully sublime*; I suppose, because they do not understand it.

(3) "Verum hi pronuntiatione quoque famam dicendi fortius quærent. Nam et clamant ubique, et omnia *levata* (ut ipsi vocant) *manu* emugiunt, multo discursu, anhelitu, jactatione, gestu, motu, capitis furentes. Jam, collidere manus; terræ pedem incuteræ; femur, pectus, frontem cædere; mire ad pullatum circulum facit: cum ille eruditus, ut in oratione multa submittere, variare, disponere, ita etiam in pronuntiando suum cuique, eorum quæ dicit, colori accom-

is true that some wise, or learned, or good men have thus spoken, it must be remembered that men of genius sometimes talk in hyperbole. Confined to the closet, they are too little acquainted with human nature; or their feelings speak, rather than their judgment. Let us return, however, to these Discourses on Astronomy.

Suffer me, then, to state, freely and candidly, my opinion on this subject. The design and tendency of a work is much connected with the style of its execution. Intended to remove the doubts of the infidel astronomer and mathematician, I expected to see some display of the rational powers; something like reasoning, discussion, and argument. But in this book I see nothing of this nature. All is splendid declamation: the imagination is in one perpetual blaze; and the fire ultimately terminates in smoke. When I was a school-boy, and taught the science of geometry, my tutor was not satisfied unless in every theorem I clearly and simply discussed the proposition, arranged my ideas, formed some general conclusions, and then added the usual corollaries. In every oration, I have been taught, there should be a beginning,

modare actum sciat; et, si quid sit perpetua observatione dignum, modestus et esse et videri malit." *Quintiliani, lib. 2. cap. 13.*

a middle, and an end. But in these Discourses all is luxuriant and wild—a jumble of declamatory paragraphs. You acknowledge there is some defect in the arrangement—a want of that lucid order, which contributes so much to the pleasure and satisfaction of the reader (4); but then you say, “there is nature, nature in all her lovely pride, and nature from the mountains of Scotland.” I am not, as you well know, an advocate for the religion, or the law of nature, separated from original instruction and divine revelation; and yet I am much delighted with the beauties of nature, and with the works of creation. No one feels greater pleasure in the sublime and elevated scenery of a beautiful landscape. I do not admire human nature, wild and uncultivated; and I am far from thinking that Dr. Chalmers is so much the child of nature as you are willing to suppose. There appear marks of high-wrought culture, considerable labour, and mental finish, in some passages of this performance. But let us be guided, if you please, by the language and imagery of nature.

I observe, then, that nature loves simplicity. She is not gaudy—her aspect is lovely in the eye of the peasant as well as of the philosopher. She possesses charms to excite universal admiration.

(4) “*Jam primum ordo est geometriæ necessarius : nonne et eloquentiæ ?*” *Quintiliani, lib. 1, cap. 9.*

A beautiful female is not enriched by being encumbered with a weight of ornaments. Here plainness, neatness, and simple attire, give new attractions to the most beautiful forms (5). But these Discourses are destitute of that simplicity which is so apparent in the scenery of nature. The clown is dazzled with the glare of light, and the philosopher detects the finery of art. The fop is not a fine gentleman: there is something awkward and disgusting in his appearance, especially to a correct and elegant taste. He wants simplicity, and those nice and delicate proportions which are becoming and ornamental. I consider these Discourses altogether destitute of the simplicity of nature, and dressed up according to the fashion and taste of the author, in mere tinsel, foppery—or, if you please, finery (6).

(5) " True eloquence does not consist, as the rhetoricians assure us, in saying great things in a sublime style, but in a simple style; for there is, properly speaking, no such thing as a sublime style: the sublimity lies only in the things; and when they are not so, the language may be turgid, affected, metaphorical, but not affecting."

Goldsmith's Miscellaneous Works, vol. 4, p. 258.

(6) " After a regard to the purity of our language, the next quality of a just style is its plainness and perspicuity. This is the greatest commendation we can give an author, and the best argument that he is master of the language he writes in, and the subject he writes upon, when we under-

Again.—Nature loves variety, which has a great share in producing beauty (7). Walk into a well-stocked garden, and view the different forms and colours of flowers, and plants, and leaves; range the fields—observe the variegated paintings on the wings of butterflies—look at the face of creation; the whole is decorated with a pleasing, an instructive variety (8). Examine a single object; the tree is not all root, or trunk, or leaves, or fruit: variety is impressed upon every object. By a glance at the varied objects in nature, the eye becomes interested, and the

stand him, and see into the scope and tendency of his thoughts, as we read him." *Felton on the Classics.*

(7) "It is variety which gives such grace and force to the action of an orator, and made Demosthenes far excel all others." *Fenelon.*

"All the senses delight in it, and equally are averse to sameness. The ear is as much offended with one even continued note, as the eye is with being fixed to a point, or to the view of a dead wall." *Hogarth's Analysis of Beauty.*

(8) "Variety is apparent in the elegant, but serpentine disposition of the vallies, occasioned originally by the descent of water, constituting the chief beauty of a prospect. We see it productive of "that line of beauty," which is so much admired in the natural windings of a river; and which art, if it would please the eye, must be careful to imitate, but still with a proper mixture of variety: for nature never yet made two vallies alike." *Jones's Physiological Disquisitions*, p. 474.

heart enjoys a mental repast. But in these Discourses I observe a striking contrast, a perpetual sameness of language and imagery, a reiteration of thought, altogether different from the rich verdure of nature. Variety is wanting ; without which the heart is not dilated by "the loveliness of song (9)."

Nature is harmonious : uniformity, symmetry, and proportion, must be joined to sim-

(9) "A sweet or luscious taste quickly satiates and cloy's of itself ; but is rendered agreeably delicious when tempered by pungency, acidity, or bitterness. In like manner, beauty becomes far more engaging by a certain intermixture of the irritating qualities, as roughness, abrupt variation, intricacy, and disorder."

Essays on the Sources of Pleasure in Literary Composition, p. 297.

"The human mind naturally requires variety ; and a constant round of one pleasure, would very soon pall and disgust man. Were we to have an ever-blooming verdure, fanned with soft zephyrs, and enlightened by a gentle sun, we should soon grow insensible and inattentive to such enjoyments. Variety comes and gives a relish and vigour to enjoyment. Occasional disappointments and deprivations give pleasure to succeeding attainments : pain gives a higher feeling to returning pleasures : the dark night forms a strong contrast to the bright day : piercing cold makes us more sensible to returning warmth : the deadness of winter recommends the life of spring, the vigour of summer, and the riches of harvest ; and short days give a more lively sweetness to the lengthened light of the summer's sun."

Watson's Popular Evidences of Natural Religion and Christianity, chap. 8.

S

plicity and variety. When contrasts succeed each other, we feel the transitions, and the several parts have the beauties of musical imitation. If you strike but one key of a musical instrument, it does not give a pleasing sound ; a chord is necessary to yield harmony. In the scenes of nature, you observe quantity and proportion. In a beautiful painting the perspective is accurate, the figures natural—nothing *outré* or extravagant : all improper excesses become inelegant (10). But in these Discourses I find a want of natural harmony ; an amplification, but not a growing energy of thought, which some persons may admire, but I cannot. To me it appears like a vitiated taste, an abuse of the privilege—the *fecunda licentia vatum*, with which the painter and the poet is sometimes indulged (11). These figures and proportions, so unnatural may suit the spe-

(10) “ In architecture and painting, order, beauty, and proportion, fill and relieve the eye. A just disposition gives us a clear view of the whole at once ; and the due symmetry and proportion of every part of itself, and of all together, leave no vacancy in our thoughts or eyes ; nothing is wanting—every thing is complete, and we are satisfied in beholding.”

Felton on the Classics.

(11) “ Birds of a weak flight move always in a line ; but the eagle, wonderful in his soarings, shows in his very stoops the power of his wing.” *Webb's Remarks on Poetry, p. 13.*

culations to which they are applied, because they are thrown into an endless vacuum, where the imagination plays with forms and varieties, dark, mysterious, and unknown (12).

I could easily proceed to point out particular figures and sentences, which are unnatural and extravagant; some very extraordinary phrases, of Scottish prolixity and exuberance: but this I consider as unnecessary. Apply these general remarks in your next perusal of these Discourses. I may be mistaken in my judgment, and perhaps cannot form a right estimate; or else have a deficiency of taste, in not following the general tide of admiration. If it is so, I am willing to

(12) "Respicere exemplar vitæ movumque jubebo
Doctum imitatore, et vivas hinc ducere voces.
Interdum speciosa locis, morataque rectè
Fabula, nullius veneris, sine pondere et arte,
Valdiùs oblectat populum, meliusque moratur,
Quàm versus inopes rerum, nugæque canoræ."

Horatii Ars Poetica.

"Keep nature's great original in view,
And thence the living images pursue;
For when the sentiments and diction please,
And all the characters are wrought with ease,
Your play, though void of beauty, force, and art,
More strongly shall delight, and warm the heart,
Than where a lifeless pomp of verse appears,
And with sonorous trifles charms our ears.

Francis.

confess my fault, provided you will prove to me that these remarks are groundless.

You direct my particular attention to the two last Discourses, as "strikingly grand, and eminently beautiful:" but here I perceive no accordancy between the style, the imagery, and the subject. What is the design of Dr. Chalmers in the last Discourse? To shew the dangers resulting from the exercise of taste in matters of religion. The design is good, and very important. But how has he executed the task? By endeavouring to gratify the man of mere taste, with the dazzling pictures which he presents to our notice. With the one hand he builds, with the other he pulls down. There is an evident attempt at display; a sort of embellishment, which is artificial, and directly opposed to the nature of his subject (13). You perceive in it a

(14) "Au milieu de si grandes vérités, un predicateur est-il excusable de ne s'occuper qu'à faire un vain etalage d'elocution, à chercher des pensées brillantes, à arrondir des periodes, à entasser de vaines figures? Que deviennent cependant cette douleur et cette tristesse dont il doit être penetré en parlant de tels sujets, et qui devroient ne faire de tout son discours qu'un continuel gémissement? N'auroit-on pas lieu de s'indigner s'il se mettoit en peine de montrer de l'esprit, et s'il avoit le loisir de songer à faire le beau parleur, dans un tems où il ne faut que tonner, foudroyer, et employer les mouvemens les plus vifs et les plus animés?"

Rollin, Belles Lettres, tom 2. p. 376.

great want of scriptural accuracy of sentiment, and very little to affect the heart. It is not that rich and powerful eloquence, alternately freezing and burning, embodied by the word of life, which carries conviction to the conscience and touches every feeling and passion of the soul (14). In scripture illustration he is extremely defective—a defect which cannot be too strongly reprobated in any preacher. A skilful arrangement of texts of scripture, interwoven in any discourse, will make more impression upon the heart than the amplified eloquence of Cicero, aided by the fire and grandeur of Demosthenes (15).

I acknowledge, that there are passages in these Discourses which possess sublimity. We sometimes observe a grandeur and boldness of

(14) “ The sublime majesty and royal magnificence of the scripture poems are above the reach, and beyond the power of all mortal wit. Take the best and liveliest poems of antiquity, and read them as we do the scriptures, in a prose translation, and they are flat and poor. Horace, and Virgil, and Homer, lose their spirit and strength in the transfusion to that degree, that we have hardly patience to read them. But the sacred writings, even in our translation, preserve their majesty and their glory, and very far surpass the brightest and noblest compositions of Greece and Rome.”

Felton on the Classics.

(15) The collection of Texts, or Notes, appended to these Discourses, is a singular fancy. The greatest puzzle is to find out their propriety, or suitability.

thought, and elevation of feeling, which is captivating and impressive. These constitute the charm of the book, and operate like magic upon the majority of its readers ; but it wants other qualities—a mixture of the beautiful, drawn from nature, to render it a production of lasting fame. I compare it not to the starry heavens, for there all is beautiful, and the eye is never satiated with the varied aspects and imagery which it presents ; but I would compare it to a brilliant illumination, and an evening transparency, by which a mob is attracted, and the charms of nature in a beautiful sky are entirely eclipsed. But the effect is momentary. The scene passes away, and the whole is obliterated by the splendours of the rising sun. I would compare it to something more familiar, but perhaps more appropriate ; it is like gilt gingerbread ; the gilding is fine and attractive, and the taste insipid ; boys it may please, but it does not suit the palate of men (16).

(16) “ Perhaps, as a general remark, we shall not be far from the truth if we say, that the whole composition is too rhetorical. It is covered over with one crimson flush. A few intermissions of vivacity would have improved, upon the whole, the tone of the colouring ; but the mind of the writer, full of sap and living juices, under the glowing influence of the radiant heaven he has described, has kept nothing back, but has burst at once into total efflorescence.” *British Review*, p. 28, No. 19.

Is this then to be considered as a sample of Scottish eloquence? I hope not. How different from the purity, and delicacy, and sublimity of the English style! There are some persons, who may prefer the howling winds of the north, to the gentle and refreshing breezes of the south; the moss and the peat, to the solid oak; or the barren heaths of Kilmany, to the richness and luxuriance of the Surrey Hills. But such preference would not be generally admired. With as much propriety may you prefer the eloquence in Dr. Chalmers' Discourses to that of writers with whom you are daily conversant. It is not that kind of eloquence which agrees with the proper standards of excellence:—very different from Longinus and Quintilian, or Fenelon, or Claude. The cultivation of such rhapsodical sentences, in this island, would soon leave us in a retrograde position, and extinguish all taste for the best writers we possess. In vain should we read the works of Addison, Atterbury, and Barrow; of Dryden, Jeremy Taylor, and Tillotson, or the most eminent writers of the last century, if such florid works as these are to rivet the public attention and direct the popular taste (17).

(17) "The reputation of a writer makes even his errors fashionable: we naturally imitate those whom we admire; and when we cannot assume their graces, we adopt their foibles." *Webb's Remarks*, p. 30.

But I feel persuaded that the effect is artificial and momentary. Like a comet this meteor burst upon our horizon ; and like a comet it will return. Its path is mysterious and unknown, and its effect is speculation and uncertainty (18).

I am, dear Sir,

Yours, &c.

(18) It is not to be supposed, that I intended any thing unfavourable to the genius, the learning, or the talents of our northern brethren. Should any one suppose this to be any part of my design, he is greatly mistaken. Scotland has claims upon my affection and warmest regards. In a few years she has produced some of the most distinguished and able writers of this or any other country—the boast of Great Britain, and the admiration of the world. The works of Blair, and Hume, and Robertson, have their peculiar excellence of force, precision, and harmony. But how did they attain these excellencies ? By cultivating a familiarity with the best English authors. Too many, however, among them, continue that tedious mode of amplification, so apparent in the works of Dr. Chalmers. The public have an opportunity of judging fairly and impartially between the rival productions of the Edinburgh and Quarterly Reviews. In the Edinburgh Review, some time since, appeared a very sensible paper on the Poor Laws, and common report ascribed it to Dr. Chalmers ; but I must say, the composition is painful and disagreeable. It is like playing the *bagpipes* to an Englishman : the sounds are so dissimilar and void of all cadence and harmony, that they grate on the ear. It may, however, be delightful music on the other side of Tweed. The ability and superiority displayed in the Quarterly Review must com-

mand the increasing approbation of an enlightened public. Amongst the numerous works which have passed through my hands, which have not been a few, and to which I have devoted some attention, I have never read any prose composition so exquisitely beautiful, harmonious, and chaste, as some of the Essays in this work, particularly in the latter numbers ; which, if continued with the same ability, will establish it as the standard work of pure English style ; independent of its principles being more salutary and beneficial to the country.

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